Genie®
A TEREX COMPANY

Service Manual

Serial Number Range

GRC™-12

from GRC08-000101

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Introduction

Important

Read, understand and obey the safety rules and operating instructions in the appropriate Operator's Manual on your machine before attempting any maintenance procedure.

Basic mechanical, hydraulic and electrical skills are required to perform most procedures. However, several procedures require specialized skills, tools, lifting equipment and a suitable workshop. In these instances, we strongly recommend that maintenance and repair be performed at an authorized Genie dealer service center.

Compliance

Machine Classification
Group A/Type 2,3 as defined by ISO 16368

Machine Design Life
Unrestricted with proper opeation, inspection and scheduled maintenance.

Technical Publications

Genie Industries has endeavored to deliver the highest degree of accuracy possible. However, continuous improvement of our products is a Genie policy. Therefore, product specifications are subject to change without notice.

Readers are encouraged to notify Genie of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and all other manuals.

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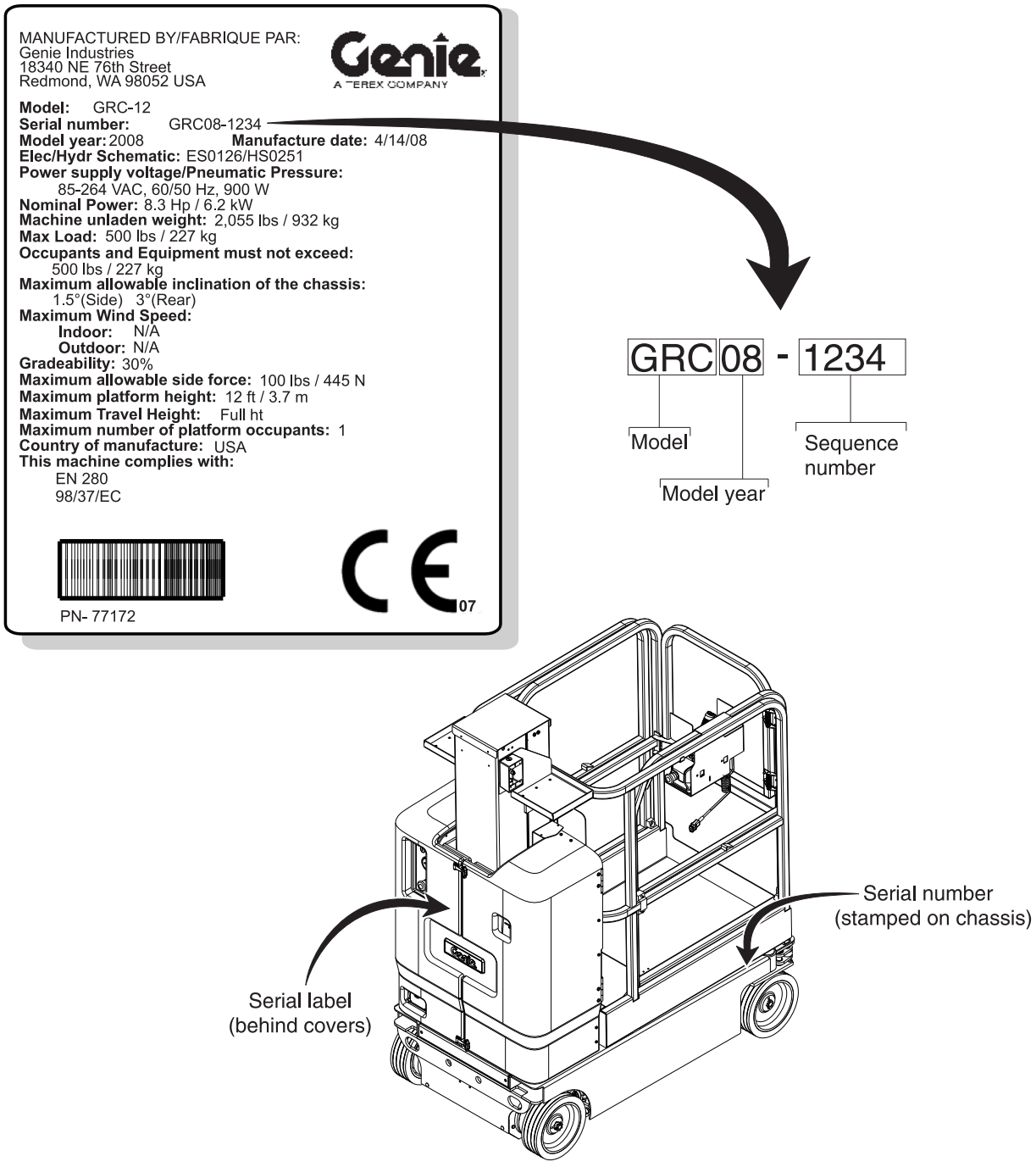
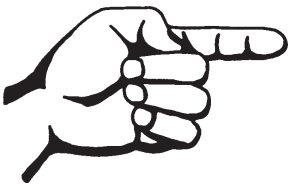
Serial Number Legend





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Safety Rules

Danger

Failure to obey the instructions and safety rules in this manual and the appropriate Operator's Manual on your machine will result in death or serious injury.

Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:

- ☑ You are trained and qualified to perform maintenance on this machine.
- ☑ You read, understand and obey:
  - manufacturer's instructions and safety rules
  - employer's safety rules and worksite regulations
  - applicable governmental regulations
- ☑ You have the appropriate tools, lifting equipment and a suitable workshop.

Personal Safety

Any person working on or around a machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine should be your top priority.

Read each procedure thoroughly. This manual and the decals on the machine, use signal words to identify the following:

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Be sure to wear protective eye wear and other protective clothing if the situation warrants it.

Be aware of potential crushing hazards such as moving parts, free swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

Workplace Safety

Be sure to keep sparks, flames and lighted tobacco away from flammable and combustible materials like battery gases and engine fuels. Always have an approved fire extinguisher within easy reach.

Be sure that all tools and working areas are properly maintained and ready for use. Keep work surfaces clean and free of debris that could get into machine components and cause damage.

Be sure any forklift, overhead crane or other lifting or supporting device is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or straps that are in good condition and of ample capacity.

Be sure that fasteners intended for one time use (i.e., cotter pins and self-locking nuts) are not reused. These components may fail if they are used a second time.

Be sure to properly dispose of old oil or other fluids. Use an approved container. Please be environmentally safe .

Be sure that your workshop or work area is properly ventilated and well lit.

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Specifications

REV A

Machine Specifications

Batteries, Standard	
Voltage	6V DC
Group	GC2
Type	T-105
Quantity	4
Battery capacity, maximum	225AH
Reserve capacity @ 25A rate	447 minutes

Batteries, Maintenance-free (option)	
Voltage	6V DC
Group	GC2
Type	6V-AGM
Quantity	4
Battery capacity, maximum	200AH
Reserve capacity @ 25A rate	380 minutes

Fluid capacities	
Hydraulic tank	1.5 gallons 5.7 liters
Hydraulic system (including tank)	2.2 gallons 8.3 liters

Height, stowed maximum	
GRC-12	66.8 in 1.69 m

For operational specifications, refer to the Operator's Manual.

Tires and wheels	
Tire size (solid rubber)	10 x 3 in 25.4 x 2.5 cm
Tire contact area	6.5 sq in 41.9 cm^2
Castle nut torque, dry	225 ft-lbs 305 Nm
Castle nut torque, lubricated	175 ft-lbs 237 Nm

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

SPECIFICATIONS REV A

Performance Specifications

Drive speed, maximum	
Platform stowed, fast	2.5 mph 40 ft / 10.9 sec 4 km/h 12.2 m / 10.9 sec
Platform stowed, slow	1.1 mph 40 ft / 24.8 sec 1.8 km/h 12.2 m / 24.8 sec
Platform raised	0.5 mph 40 ft / 55 sec 0.8 km/h 12.2 m / 55 sec

Braking distance, maximum	
High range on paved surface	19 in ± 6 in 48 cm ± 15 cm

Gradeability	30%
Airborne noise emissions Maximum sound level at normal operation workstations (A-weighted)	70 dB

Function speed, maximum, from platform controls (with 1 person in platform)	
Platform up	10 to 14 seconds
Platform down	14 to 18 seconds

Rated work load at full height, maximum	
Platform	500 lbs 227 kg

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

Hydraulic Specifications

Hydraulic Oil Specifications	
Hydraulic oil type	Chevron Rykon MV equivalent
Viscosity grade	Multi-viscosity
Viscosity index	200
Cleanliness level, minimum	15/13
Water content, maximum	200 ppm

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils. Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and the viscosity index should exceed 140. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids	
Biodegradable	Petro Canada Environ MV 46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

NOTICE Continued use of Chevron Aviation A hydraulic fluid when ambient temperatures are consistently above 32°F / 0°C may result in component damage.

Note: Use Chevron Aviation A hydraulic fluid when ambient temperatures are consistently below 0°F / -17°C.

Note: Use Shell Tellus T46 hydraulic oil when oil temperatures consistently exceed 205°F / 96°C.

Note: Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult the Genie Industries Service Department before use.

Function pump	
Type	Gear
Displacement per revolution	0.244 cu in 4 cc
Flow rate @ 2500 psi / 172 bar	4 gpm 15 L/min
Hydraulic tank return filter	10 micron with 25 psi / 1.7 bar bypass

Function manifold	
System relief valve pressure, maximum	3500 psi 241 bar
Lift relief valve pressure	1800 to 3500 psi 124 to 241 bar
Steer relief valve pressure	1500 psi 103 bar

Manifold Component Specifications

Plug torque	
SAE No. 2	50 in-lbs / 6 Nm
SAE No. 4	13 ft-lbs / 18 Nm
SAE No. 6	18 ft-lbs / 24 Nm
SAE No. 8	50 ft-lbs / 68 Nm
SAE No. 10	55 ft-lbs / 75 Nm
SAE No. 12	75 ft-lbs / 102 Nm

Valve Coil Resistance

Note: The following coil resistance specifications are at an ambient temperature of 68°F / 20°C. As valve coil resistance is sensitive to changes in air temperature, the coil resistance will typically increase or decrease by 4% for each 18°F / -7.7°C that your air temperature increases or decreases from 68°F / 20°C.

Description	Specification
Solenoid valve, 3 position 4 way 20V DC with diode (schematic item E)	18 to 21Ω
Solenoid valve, 3 position 4 way 20V DC with diode (schematic item F)	25 to 28Ω
Solenoid valve, 2 position 4 way 20V DC with diode (schematic item H)	18 to 21Ω
Solenoid valve, 2 position 2 way N.C. with manual override 12V DC with diode (schematic item N)	7.5 to 10.5Ω

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

SPECIFICATIONS REV A

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with JIC 37° flared fittings and hose ends. Genie specifications require that fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

SAE O-ring Boss Port
(tube fitting - installed into Aluminum)

SAE Dash size	Torque
-4	11 ft-lbs / 14.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	40 ft-lbs / 54.2 Nm
-10	69 ft-lbs / 93.6 Nm
-12	93 ft-lbs / 126.1 Nm
-16	139 ft-lbs / 188.5 Nm
-20	172 ft-lbs / 233.2 Nm
-24	208 ft-lbs / 282 Nm

JIC 37° Fittings
(swivel nut or hose connection)

SAE Dash size	Thread Size	Flats
-4	7/16-20	2
-6	9/16-18	1 1/4
-8	3/4-16	1
-10	7/8-14	1
-12	1 1/16-12	1
-16	1 5/16-12	1
-20	1 5/8-12	1
-24	1 7/8-12	1

SAE O-ring Boss Port
(tube fitting - installed into Steel)

SAE Dash size	Torque
-4	16 ft-lbs / 21.7 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	105 ft-lbs / 142.4 Nm
-12	140 ft-lbs / 190 Nm
-16	210 ft-lbs / 284.7 Nm
-20	260 ft-lbs / 352.5 Nm
-24	315 ft-lbs / 427.1 Nm

Torque Procedure

JIC 37° fittings

1 Align the tube flare (hex nut) against the nose of the fitting body (body hex fitting) and tighten the hex nut to the body hex fitting to hand-tight, approximately 30 in-lbs / 3.4 Nm.

2 Make a reference mark on one of the flats of the hex nut, and continue it on to the body hex fitting with a permanent ink marker. Refer to Figure 1.

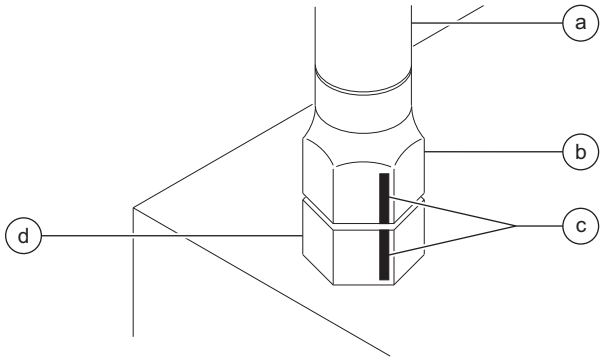

Figure 1

a hydraulic hose
b hex nut
c reference mark
d body hex fitting

3 Working clockwise on the body hex fitting, make a second mark with a permanent ink marker to indicate the proper tightening position. Refer to Figure 2.

NOTICE Use the *JIC 37° Fittings* table on the previous page to determine the correct number of flats for the proper tightening position.

NOTICE The marks indicate that the correct tightening positions have been determined. Use the second mark on the body hex fitting to properly tighten the joint after it has been loosened.

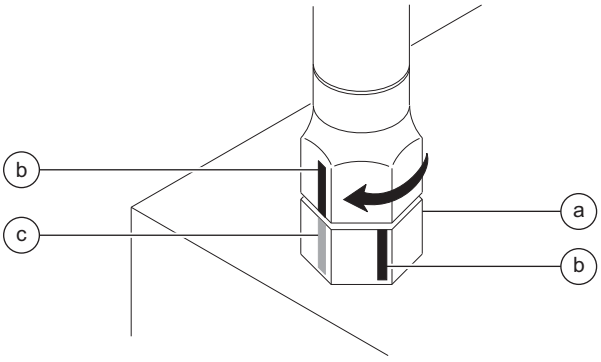

Figure 2

a body hex fitting
b reference mark
c second mark

4 Tighten the hex nut until the mark on the hex nut is aligned with the second mark on the body hex fitting.

5 Operate all machine functions and inspect the hoses and fittings and related components to confirm that there are no leaks.

SPECIFICATIONS REV A

SAE FASTENER TORQUE CHART

• This chart is to be used as a guide only unless noted elsewhere in this manual •

SIZE	THREAD	Grade 5				Grade 8				A574 High Strength Black Oxide Bolts	
		LUBED		DRY		LUBED		DRY		LUBED	
		in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
1/4	20	80	9	100	11.3	110	12.4	140	15.8	130	14.7
	28	90	10.1	120	13.5	120	13.5	160	18	140	15.8
		LUBED		DRY		LUBED		DRY		LUBED	
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	13	17.6	17	23	18	24	25	33.9	21	28.4
	24	14	19	19	25.7	20	27.1	27	36.6	24	32.5
3/8	16	23	31.2	31	42	33	44.7	44	59.6	38	51.5
	24	26	35.2	35	47.4	37	50.1	49	66.4	43	58.3
7/16	14	37	50.1	49	66.4	50	67.8	70	94.7	61	82.7
	20	41	55.5	55	74.5	60	81.3	80	108.4	68	92.1
1/2	13	57	77.3	75	101.6	80	108.4	110	149	93	126
	20	64	86.7	85	115	90	122	120	162	105	142
9/16	12	80	108.4	110	149	120	162	150	203	130	176
	18	90	122	120	162	130	176	170	230	140	189
5/8	11	110	149	150	203	160	217	210	284	180	244
	18	130	176	170	230	180	244	240	325	200	271
3/4	10	200	271	270	366	280	379	380	515	320	433
	16	220	298	300	406	310	420	420	569	350	474
7/8	9	320	433	430	583	450	610	610	827	510	691
	14	350	474	470	637	500	678	670	908	560	759
1	8	480	650	640	867	680	922	910	1233	770	1044
	12	530	718	710	962	750	1016	990	1342	840	1139
1 1/8	7	590	800	790	1071	970	1315	1290	1749	1090	1477
	12	670	908	890	1206	1080	1464	1440	1952	1220	1654
1 1/4	7	840	1138	1120	1518	1360	1844	1820	2467	1530	2074
	12	930	1260	1240	1681	1510	2047	2010	2725	1700	2304
1 1/2	6	1460	1979	1950	2643	2370	3213	3160	4284	2670	3620
	12	1640	2223	2190	2969	2670	3620	3560	4826	3000	4067

METRIC FASTENER TORQUE CHART

• This chart is to be used as a guide only unless noted elsewhere in this manual •

Size (mm)	Class 4.6				Class 8.8				Class 10.9				Class 12.9			
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
5	16	1.8	21	2.4	41	4.63	54	6.18	58	6.63	78	8.84	68	7.75	91	10.3
6	19	3.05	36	4.07	69	7.87	93	10.5	100	11.3	132	15	116	13.2	155	17.6
7	45	5.12	60	6.83	116	13.2	155	17.6	167	18.9	223	25.2	1.95	22.1	260	29.4
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
8	5.4	7.41	7.2	9.88	14	19.1	18.8	25.5	20.1	27.3	26.9	36.5	23.6	32	31.4	42.6
10	10.8	14.7	14.4	19.6	27.9	37.8	37.2	50.5	39.9	54.1	53.2	72.2	46.7	63.3	62.3	84.4
12	18.9	25.6	25.1	34.1	48.6	66	64.9	88	69.7	94.5	92.2	125	81	110	108	147
14	30.1	40.8	40	54.3	77.4	105	103	140	110	150	147	200	129	175	172	234
16	46.9	63.6	62.5	84.8	125	170	166	226	173	235	230	313	202	274	269	365
18	64.5	87.5	86.2	117	171	233	229	311	238	323	317	430	278	377	371	503
20	91	124	121	165	243	330	325	441	337	458	450	610	394	535	525	713
22	124	169	166	225	331	450	442	600	458	622	612	830	536	727	715	970
24	157	214	210	285	420	570	562	762	583	791	778	1055	682	925	909	1233

Scheduled Maintenance Procedures

Observe and Obey:

- ☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- ☑ Scheduled maintenance inspections shall be completed daily, quarterly, semi-annually, annually and every 2 years as specified on the *Maintenance Inspection Report.*

⚠WARNING Failure to properly complete each inspection when required may cause death, serious injury or substantial machine damage.

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Use only Genie approved replacement parts.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Platform in the stowed position
  - Key switch in the off position with the key removed
  - The red Emergency Stop button in the off position at both ground and platform controls
  - Wheels chocked
  - All external AC power supply disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety warnings and step-by-step instructions.

Symbols Legend

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

⊙ Indicates that a specific result is expected after performing a series of steps.

⊠ Indicates that an incorrect result has occurred after performing a series of steps.

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

Note: The following symbols have been used in this manual to help communicate the intent of the instructions. When one or more of the symbols appears at the beginning of a maintenance procedure, it conveys the meaning below.

Indicates that tools will be required to perform this procedure.

Indicates that new parts will be required to perform this procedure.

Indicates that a cold motor or pump will be required to perform this procedure.

Indicates that dealer service will be required to perform this procedure.

Pre-delivery Preparation Report

The pre-delivery preparation report contains checklists for each type of scheduled inspection.

Make copies of the *Pre-delivery Preparation* report to use for each inspection. Store completed forms as required.

Maintenance Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, quarterly, semi-annually, annually, and two year. The *Scheduled Maintenance Procedures Section and the Maintenance Inspection Report* have been divided into five subsections—A, B, C, D, and E. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	Checklist
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Semi-annually or every 500 hours	A + B + C
Annually or every 1000 hours	A + B + C + D
Two year or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

The maintenance inspection report contains checklists for each type of scheduled inspection.

Make copies of the *Maintenance Inspection Report* to use for each inspection. Maintain completed forms for a minimum of 4 years or in compliance with employer, jobsite and governmental regulations and requirements.

Pre-Delivery Preparation

Fundamentals

It is the responsibility of the dealer to perform the Pre-delivery Preparation.

The Pre-delivery Preparation is performed prior to each delivery. The inspection is designed to discover if anything is apparently wrong with a machine before it is put into service.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

Instructions

Use the operator's manual on your machine.

The Pre-delivery Preparation consists of completing the Pre-operation Inspection, the Maintenance items and the Function Tests.

Use this form to record the results. Place a check in the appropriate box after each part is completed. Follow the instructions in the operator's manual.

If any inspection receives an N, remove the machine from service, repair and re-inspect it. After repair, place a check in the R box.

Legend

Y = yes, completed
N = no, unable to complete
R = repaired

Comments

Pre-Delivery Preparation	Y	N	R
Pre-operation inspection completed			
Maintenance items completed			
Function tests completed			

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

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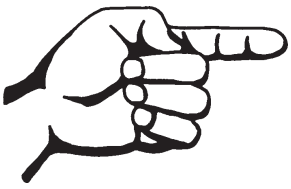

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Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

- Make copies of this report to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection to be performed.

☐	**Daily or 8 hours Inspection:**	**A**
☐	**Quarterly or 250 hours Inspection:**	**A+B**
☐	**Semi-annually or 500 hours Inspection:**	**A+B+C**
☐	**Annually or 1000 hours Inspection:**	**A+B+C+D**
☐	**Two year or 2000 hours Inspection:**	**A+B+C+D+E**

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection receives an “N”, tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the “R” box.

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Checklist A - Rev A		**Y**	**N**	**R**
A-1	Inspect the manuals and decals			
A-2	Pre-operation inspection			
A-3	Function tests			
Perform after 40 hours:				
A-4	30 day service			
Perform every 100 hours:				
A-5	Grease steer yokes			

Checklist B - Rev A		**Y**	**N**	**R**
B-1	Batteries			
B-2	Electrical wiring			
B-3	Tires and wheels			
B-4	Emergency stop			
B-5	Key switch			
B-6	Horn (if equipped)			
B-7	Inverter (if equipped)			
B-8	Drive brakes			
B-9	Drive speed - stowed			
B-10	Drive speed - raised			
B-11	Drive speed - slow			
B-12	Flashing beacons			
B-13	Alarm (if equipped)			
B-14	Hydraulic oil analysis			
B-15	Breather cap			

Checklist C - Rev A		**Y**	**N**	**R**
C-1	Breather cap - models with optional oil			

Checklist D - Rev A		**Y**	**N**	**R**
D-1	Tank return filter			

Checklist E - Rev A		**Y**	**N**	**R**
E-1	Hydraulic oil			

Comments

Checklist A Procedures

REV A

A-1
Inspect the Manuals and Decals

Genie specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Maintaining the operator's and safety manuals in good condition is essential to safe machine operation. Manuals are included with each machine and should be stored in the container provided in the platform. An illegible or missing manual will not provide safety and operational information necessary for a safe operating condition.

In addition, maintaining all of the safety and instructional decals in good condition is mandatory for safe machine operation. Decals alert operators and personnel to the many possible hazards associated with using this machine. They also provide users with operation and maintenance information. An illegible decal will fail to alert personnel of a procedure or hazard and could result in unsafe operating conditions.

1 Check to make sure that the operator's and safety manuals are present and complete in the storage container on the platform.

2 Examine the pages of each manual to be sure that they are legible and in good condition.

⊙ Result: The operator's manual is appropriate for the machine and all manuals are legible and in good condition.

☒ Result: The operator's manual is not appropriate for the machine or all manuals are not in good condition or is illegible. Remove the machine from service until the manual is replaced.

3 Open the operator's manual to the decals inspection section. Carefully and thoroughly inspect all decals on the machine for legibility and damage.

⊙ Result: The machine is equipped with all required decals, and all decals are legible and in good condition.

☒ Result: The machine is not equipped with all required decals, or one or more decals are illegible or in poor condition. Remove the machine from service until the decals are replaced.

4 Always return the manuals to the storage container after use.

Note: Contact your authorized Genie distributor or Genie Industries if replacement manuals or decals are needed.

REV A CHECKLIST A PROCEDURES

A-2
Perform Pre-operation Inspection

Genie specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Completing a Pre-operation Inspection is essential to safe machine operation. The Pre-operation Inspection is a visual inspection performed by the operator prior to each work shift. The inspection is designed to discover if anything is apparently wrong with a machine before the operator performs the function tests. The Pre-operation Inspection also serves to determine if routine maintenance procedures are required.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

A-3
Perform Function Tests

Genie specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Completing the function tests is essential to safe machine operation. Function tests are designed to discover any malfunctions before the machine is put into service. A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed from service.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

CHECKLIST A PROCEDURES REV A

A-4
Perform 30 Day Service

The 30 day maintenance procedure is a one-time sequence of procedures to be performed after the first 30 days or 40 hours of usage. After this interval, refer to the maintenance checklists for continued scheduled maintenance.

The 30 day maintenance procedure is a one time procedure to be performed after the first 30 days or 40 hours of usage. After this interval, refer to the maintenance tables for continued scheduled maintenance.

1 Perform the following maintenance procedures:

- B-3 Inspect the Tires and Wheels (including castle nut torque)
- D-1 Replace the Hydraulic Tank Return Filter

A-5
Grease the Steer Yokes

Genie specifications require that this procedure be performed every 100 hours of operation.

Regular application of lubrication to the steer yokes is essential to good machine performance and service life. Continued use of an insufficiently greased steer yoke will result in component damage.

1 Locate the grease fitting on the top of the steer yoke.

2 Pump multipurpose grease into the steer yoke until the steer yoke is full and grease is being forced past the bearings. Repeat this step for the other steer yoke.

Grease Specification
Chevron Ultra-duty grease, EP NLGI 1 (lithium based) or equivalent

Checklist B Procedures

REV A

B-1
Inspect the Batteries

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper battery condition is essential to good machine performance and operational safety. Improper fluid levels or damaged cables and connections can result in component damage and hazardous conditions.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠WARNING Bodily injury hazard. Batteries contain acid. Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

1 Put on protective clothing and eye wear.

2 Raise the platform approximately 3 feet / 1 m.

3 Open the battery cover. Rest the cover against the chassis.

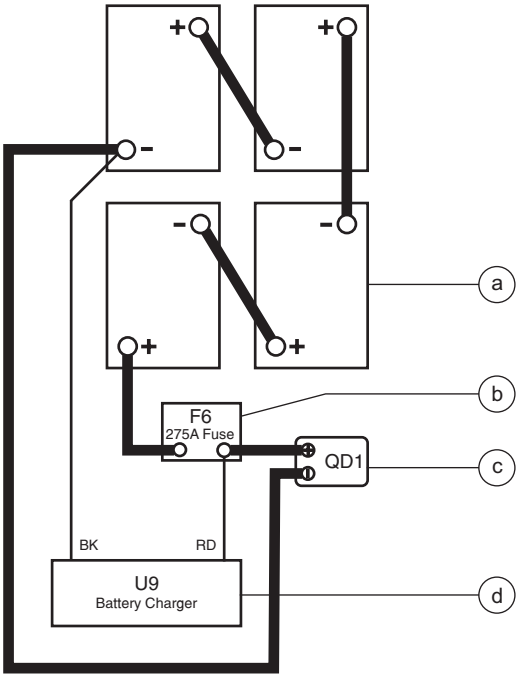
4 Lower the platform until the mast just contacts the battery cover.

⚠WARNING Crushing hazard. Keep hands clear of the battery cover when lowering the platform.

5 Be sure that the battery cable connections are free of corrosion.

Note: Adding terminal protectors and a corrosion preventative sealant will help eliminate corrosion on the battery terminals and cables.

6 Be sure that the battery hold downs and cable connections are tight.



a batteries B5
b 275A fuse F6
c quick disconnect QD1
d battery charger U9

7 Be sure that the battery separator wire connections are tight (if equipped).

8 Fully charge the batteries. Allow the batteries to rest 24 hours before performing this procedure to allow the battery cells to equalize.

9 Put on protective clothing and eye wear.

Models without maintenance-free or sealed batteries:

10 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.

CHECKLIST B PROCEDURES REV A

11 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:

- Add 0.004 to the reading of each cell for every 10° / 5.5° C above 80° F / 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.

⊙ Result: All battery cells display an adjusted specific gravity of 1.277 or higher. The battery is fully charged. Proceed to step 15.

⊠ Result: One or more battery cells display a specific gravity of 1.217 or below. Proceed to step 12.

12 Perform an equalizing charge OR fully charge the batteries and allow the batteries to rest at least 6 hours.

13 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.

14 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:

- Add 0.004 to the reading of each cell for every 10° / 5.5° C above 80° F / 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.

⊙ Result: All battery cells display a specific gravity of 1.277 or greater. The battery is fully charged. Proceed to step 15.

⊠ Result: The difference in specific gravity readings between cells is greater than 0.1 OR the specific gravity of one or more cells is less than 1.177. Replace the battery.

15 Check the battery acid level. If needed, replenish with distilled water to 1/8 inch / 3 mm below the bottom of the battery fill tube. Do not overfill.

16 Install the vent caps and neutralize any electrolyte that may have spilled.

All models:

17 Check each battery pack and verify that the batteries are wired correctly.

18 Inspect the battery charger plug and pigtail for damage or excessive insulation wear. Replace as required.

19 Connect the battery charger to a properly grounded 115V/60Hz or 230V/60Hz single phase AC power supply.

⊙ Result: The charger should operate and begin charging the batteries.

⊠ If, simultaneously, the charger alarm sounds and the LEDs blink **one time**, correct the charger connections at the fuse and battery. The charger will then operate correctly and begin charging the batteries.

If, simultaneously, the charger alarm sounds and the LEDs blink **two times**, the input voltage is too low or too high. Correct the voltage issue. The charger will then operate correctly and begin charging the batteries.

If, simultaneously, the charger alarm sounds and the LEDs blink **three times**, the charger is overheated. Allow the charger to cool. The charger will then operate correctly and begin charging the batteries.

Note: For best results, use an extension of adequate size with a length no longer than 50 feet / 15 m.

Note: If you have any further questions regarding the battery charger operation, please contact the Genie Industries Scissor Service Department.

B-2
Inspect the Electrical Wiring

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining electrical wiring in good condition is essential to safe operation and good machine performance. Failure to find and replace burnt, chafed, corroded or pinched wires could result in unsafe operating conditions and may cause component damage.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Inspect the underside of the chassis for damaged or missing ground straps.

2 Inspect the following areas for burnt, chafed, corroded and loose wires:

- Mast cable
- Platform controls
- Power to platform wiring

3 Inspect the following areas for burnt, chafed, corroded and loose wires:

- Ground control panel
- Hydraulic power unit

4 Inspect for a liberal coating of dielectric grease in all wiring connections between the ECM and the platform controls, and level sensor wiring.

5 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

6 Raise the platform approximately 8 feet / 2.4 m from the ground.

7 Place a lifting strap from an overhead crane under the platform. Support the platform. Do not apply any lifting pressure.

NOTICE Component damage hazard. The platform railings can be damaged if they are used to lift the platform. Do not attach the lifting strap to the platform railings.

8 Inspect the center chassis area for burnt, chafed and pinched cables.

9 Open the battery tray cover.

10 Inspect the battery tray for burnt, chafed and pinched cables.

11 Close the battery tray cover.

12 Remove the strap from the platform.

13 Lower the platform to the stowed position and turn the machine off.

CHECKLIST B PROCEDURES REV A

B-3
Inspect the Tires and Wheels (including castle nut torque)

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining the tires and wheels in good condition, including proper castle nut torque, is essential to safe operation and good performance. Tire and/or wheel failure could result in a machine tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

1 Check the tire surface and sidewalls for cuts, cracks, punctures and unusual wear.

2 Check each wheel for damage, bends and cracks.

3 Remove the cotter pin and check each castle nut for proper torque. Refer to Section 2, *Specifications.*

Note: Always replace the cotter pin with a new one when removing the castle nut or when checking the torque of the castle nut.

4 Install a new cotter pin. Bend the cotter pin to lock it in place.

B-4
Test the Emergency Stop

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

A properly functioning Emergency Stop is essential for safe machine operation. An improperly operating red Emergency Stop button will fail to shut off power and stop all machine functions, resulting in a hazardous situation.

Note: As a safety feature, selecting and operating the ground controls will override the platform controls, except the platform red Emergency Stop button.

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Push in the red Emergency Stop button at the ground controls to the off position.

⊙ Result: No machine functions should operate.

3 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

4 Push down the red Emergency Stop button at the platform controls to the off position.

⊙ Result: No machine functions should operate.

Note: The red Emergency Stop button at the ground controls will stop all machine operation, even if the key switch is switched to platform control.

B-5
Test the Key Switch

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper key switch action and response is essential to safe machine operation. The machine can be operated from the ground or platform controls and the activation of one or the other is accomplished with the key switch. Failure of the key switch to activate the appropriate control panel could cause a hazardous operating situation.

Note: Perform this procedure from the ground using the platform controls. Do not stand in the platform.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Turn the key switch to **platform control**.

3 Check the platform up/down function from the **ground controls**.

⊙ Result: The machine functions should **not** operate.

4 Turn the key switch to **ground control**.

5 Check the machine functions from the **platform controls**.

⊙ Result: The machine functions should **not** operate.

6 Turn the key switch to the off position.

7 Test the machine functions from the ground and platform controls.

⊙ Result: No machine functions should operate.

B-6
Test the Automotive-style Horn (if equipped)

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

The horn is activated at the platform controls and sounds at the ground as a warning to ground personnel. An improperly functioning horn will prevent the operator from alerting ground personnel of hazards or unsafe conditions.

1 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Push down the horn button at the platform controls.

⊙ Result: The horn should sound.

CHECKLIST B PROCEDURES REV A

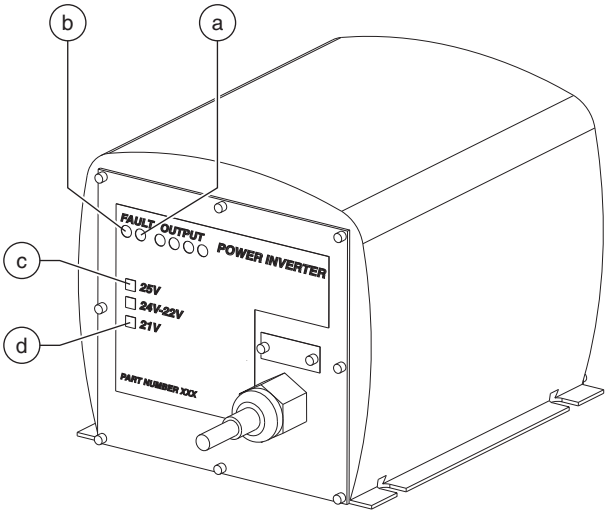
B-7
Inspect the Voltage Inverter (if equipped)

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

The inverter is activated whenever the power is on, and an electrical tool is connected to the inverter and turned on.

1 Inspect the inverter plug and pigtail for damage or excessive insulation wear. Replace as required.

2 Turn the key switch to the on position and pull out the red Emergency Stop button to the on position at both the ground and platform controls.



a right fault LED
b left fault LED
c 25V LED
d 21V LED

3 Connect an appropriate power tool to the inverter. Activate the tool.

⊙ Result: The power tool should operate. There may be a brief (0.5 second) delay if the power tool has not been used in the previous 10 minutes.

⊠ If the left fault LED (REV_POL) is illuminated, the inverter is connected to batteries with the incorrect polarity. Correct the polarity issue with the red wire to battery positive and the black wire to battery negative. The inverter will then operate correctly and begin supplying AC power.

⊠ If the right fault LED (123) blinks **one time**, the power draw is too high. The tool being used requires too much power to operate or is being used at or near the limit of the inverter for an extended period of time. Reduce the power draw. The inverter will then operate correctly and begin supplying AC power.

⊠ If the right fault LED (123) blinks **two times**, the Ground Fault Interrupt (GFI) has been activated. A short circuit or partial short exists between the AC hot and ground in the tool or outlet. Check the tool for burnt, chafed, corroded and loose wires, and inspect the tool for internal moisture. Correct the short circuit or moisture issue OR inspect the wiring in the power-to-platform box. The inverter will then operate correctly and begin supplying AC power.

⊠ If right fault LED (123) blinks **three times**, the inverter is overheated. Allow the inverter to cool. The inverter will then operate correctly and begin supplying AC power.

⊠ If the battery 25 volt fault LED (25V) blinks one time, the battery voltage is over 30V. Operate the machine to lower the voltage level. The inverter will then operate correctly and begin supplying AC power.

⊠ If the battery 21 volt fault LED (21V) blinks one time, the battery voltage is less than 20V DC. The inverter will continue to operate until the battery voltage falls to 17.8V DC.

REV A CHECKLIST B PROCEDURES

B-8
Test the Drive Brakes

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper brake action is essential to safe machine operation. The drive brake function should operate smoothly, free of hesitation, jerking and unusual noise. Hydraulically-released individual wheel brakes can appear to operate normally when not fully operational.

Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

Note: Be sure the platform extension deck is fully retracted and the platform is in the stowed position.

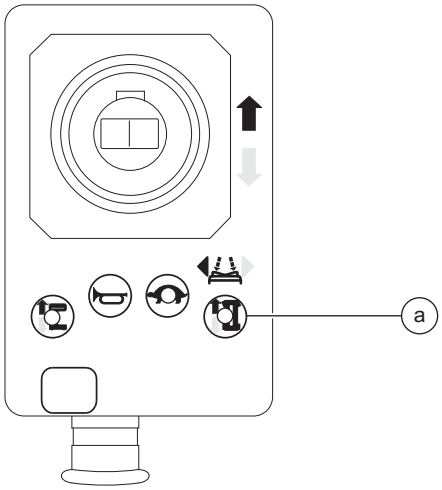
1 Mark a test line on the ground for reference.

2 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

3 Lower the platform to the stowed position.

4 Press the drive function select button.

5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the test line.



a drive function select button BN8

6 Bring the machine to top drive speed before reaching the test line. Release the function enable switch or the joystick when your reference point on the machine crosses the test line.

7 Measure the distance between the test line and your machine reference point. Refer to Section 2, *Specifications*.

Note: The brakes must be able to hold the machine on any slope it is able to climb.

CHECKLIST B PROCEDURES REV A

B-9
Test the Drive Speed - Stowed Position

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper drive functions are essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

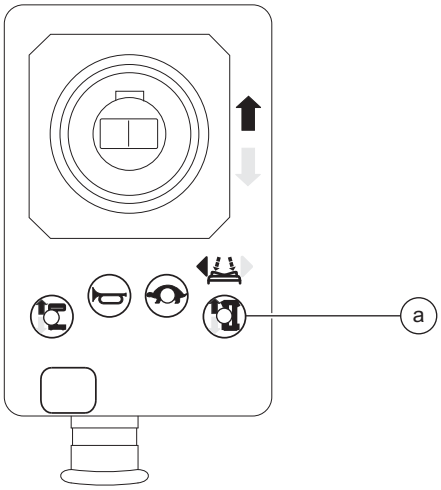
1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

2 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

3 Lower the platform to the stowed position.

4 Press the drive function select button.

5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.



a drive function select button BN8

6 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

7 Continue at full speed and note the time when your reference point on the machine passes over the finish line. Refer to Section 2, *Specifications*.

REV A CHECKLIST B PROCEDURES

B-10
Test the Drive Speed - Raised Position

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper drive functions are essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

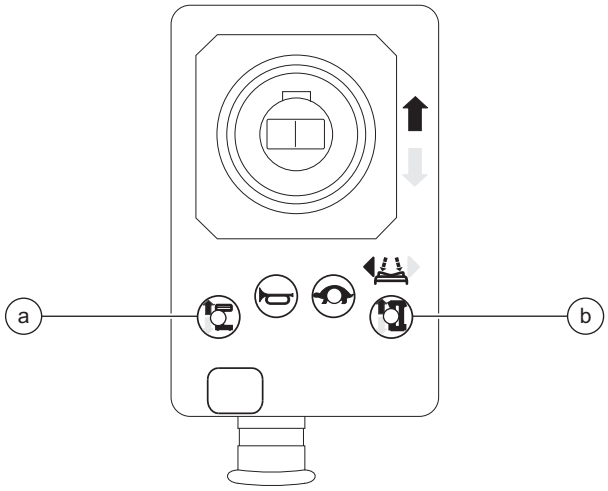
2 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

3 Press the lift function select button.

4 Press and hold the function enable switch on the joystick.

5 Raise the platform approximately 4 feet / 1.2 m from the ground.

6 Press the drive function select button.



a lift function select button BN9
b drive function select button BN8

7 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

8 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

9 Continue at full speed and note the time when your reference point on the machine passes over the finish line. Refer to Section 2, *Specifications*.

CHECKLIST B PROCEDURES REV A

B-11
Test the Slow Drive Speed

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper drive functions are essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

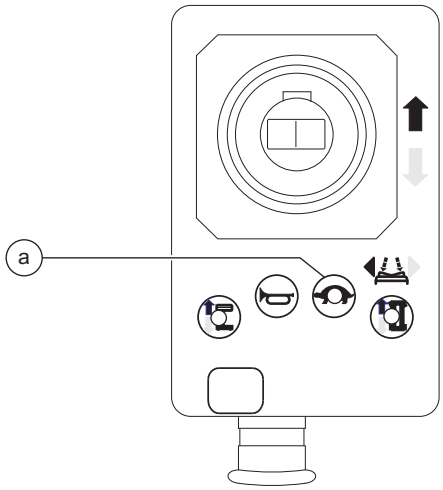
1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

2 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

3 Lower the platform to the stowed position.

4 Press the slow speed select button.

5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.



a slow speed select button BN6

6 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

7 Continue at full speed and note the time when your reference point on the machine passes over the finish line. Refer to Section 2, *Specifications*.

B-12
Test the Flashing Beacons

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Flashing beacons are used to alert operators and ground personnel of machine proximity and motion. The flashing beacons are located on both sides of the mast.

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

⊙ Result: The beacons should flash.

2 Turn the key switch to platform controls.

⊙ Result: The beacons should flash.

B-13
Test the Motion Alarm (if equipped)

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Alarms are used to alert operators and ground personnel of machine proximity and motion. The motion alarm is located in the ground control box and, when activated, will sound at 60 beeps per minute.

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Raise the platform approximately 1 foot / 0.3 m.

⊙ Result: When raising the platform, the motion alarm should sound.

3 Lower the platform to the stowed position.

⊙ Result: When lowering the platform, the motion alarm should sound.

4 Turn the key switch to platform controls.

5 Press the lift function select button.

6 Press and hold the function enable switch on the joystick. Move the joystick off center, hold for a moment and then release it. Move the joystick off center in the opposite direction, hold for a moment and then release it.

⊙ Result: The motion alarm should sound when the joystick is moved off center in either direction.

7 Press the drive function select button.

8 Press and hold the function enable switch on the joystick. Move the joystick off center, hold for a moment and then release it. Move the joystick off center in the opposite direction, hold for a moment and then release it.

⊙ Result: The motion alarm should sound when the joystick is moved off center in either direction.

9 Press and hold the function enable switch on the joystick. Press and hold the thumb rocker switch for a moment to the left position and then release it. Press and hold the thumb rocker switch for a moment to the right position and then release it.

⊙ Result: The motion alarm should sound when the rocker switch is moved off center in either direction.

B-14
Perform Hydraulic Oil Analysis

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often. Refer to Section 2, *Specifications*.

Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary.
If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test. See E-1, *Test or Replace the Hydraulic Oil.*

B-15
Inspect the Breather Cap

Genie specifications require that this procedure be performed quarterly or every 250 hours, whichever comes first. Perform this procedure more often if dusty conditions exist.

A free-breathing hydraulic tank cap is essential for good machine performance and service life. A dirty or clogged cap may cause the machine to perform poorly. Extremely dirty conditions may require that the cap be inspected more often.

1 Remove the breather cap from the hydraulic tank.

2 Check for proper venting.

⊙ Result: Air passes through the breather cap.

⊠ Result: If air does not pass through the cap, clean or replace the cap. Proceed to step 3.

Note: When checking for positive tank cap venting, air should pass freely through the cap.

3 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air. Repeat step 2.

4 Install the breather cap onto the hydraulic tank.

Checklist C Procedure

REV A

C-1
Replace the Hydraulic Tank Breather Cap - Models with Optional Hydraulic Oil

Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first OR when the machine fails to lift the maximum rated load.

The hydraulic tank is a vented-type tank. The breather cap has an internal air filter that can become clogged or, over time, can deteriorate. If the breather cap is faulty or improperly installed, impurities can enter the hydraulic system which may cause component damage. Extremely dirty conditions may require that the cap be inspected more often.

1 Remove and discard the hydraulic tank breather cap.

2 Install and new cap onto the tank.

Checklist D Procedure

REV A

D-1
Replace the Hydraulic Tank Return Filter

Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Replacement of the hydraulic tank return filter is essential for good machine performance and service life. A dirty or clogged filter may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

⚠CAUTION Beware of hot oil. Contact with hot oil may cause severe burns.

Note: The hydraulic tank return filter is mounted on the function manifold next to the hydraulic power unit.

1 Clean the area around the oil filter. Remove the filter with an oil filter wrench.

2 Apply a thin layer of oil to the new oil filter gasket.

3 Install the new filter and tighten it securely by hand.

4 Use a permanent ink marker to write the date and number of hours from the hour meter onto the filter.

5 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

6 Activate and hold the platform up toggle switch.

7 Inspect the filter and related components to be sure that there are no leaks.

8 Clean up any oil that may have spilled.

Torque specifications	
Hydraulic tank drain plug, dry	40 in-lbs 4.5 Nm
Hydraulic tank drain plug, lubricated	30 in-lbs 3.4 Nm

Checklist E Procedure

REV A

E-1
Test or Replace the Hydraulic Oil

Genie specifications require that this procedure be performed every 2000 hours or every two years, whichever comes first.

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often.

Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

Note: Perform this procedure with the platform in the stowed position.

1 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

2 Open the power unit module tray.

3 Tag and disconnect the hydraulic tank return hard line from the hydraulic filter head and remove the hard line from the tank. Cap the fitting on the filter head.

4 Tag and disconnect the hydraulic pump inlet hard line and remove the hard line from the tank. Cap the fitting on the pump.

5 Remove the hydraulic tank retaining fasteners and remove the hydraulic tank from the machine.

6 Drain all of the oil into a suitable container. Refer to Section 2, *Specifications*, for capacity information.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

7 Clean up any oil that may have spilled. Properly discard the used oil.

8 Clean the inside of the hydraulic tank using a mild solvent. Allow the tank to dry completely.

9 Install the hydraulic tank and install and tighten the hydraulic tank retaining fasteners. Torque to specification.

Torque specifications	
Hydraulic tank retaining fasteners, dry	35 in-lbs 4 Nm
Hydraulic tank retaining fasteners, lubricated	26 in-lbs 2.9 Nm

10 Install the hydraulic pump inlet hard line into the tank. Install the fitting onto the pump and torque to specification. Refer to Section 2, *Specifications*.

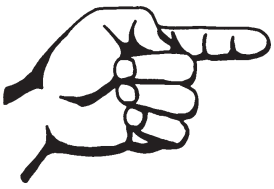
11 Install the hydraulic pump return hard line into the tank. Install the fitting onto the hydraulic filter head and torque to specification. Refer to Section 2, *Specifications*.

12 Fill the tank with hydraulic oil until the fluid is at the FULL indicator on the hydraulic tank. Do not overfill.

13 Activate the pump to fill the hydraulic system with oil and bleed the system of air.

NOTICE Component damage hazard. The pump can be damaged if operated without oil. Be careful not to empty the hydraulic tank while in the process of filling the hydraulic system. Do not allow the pump to cavitate.

14 Repeat steps 12 through 13 until the hydraulic system and tank are both full.



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Repair Procedures

Observe and Obey:

- ☑ Repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Use only Genie approved replacement parts.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Platform in the stowed position
  - · Key switch in the off position with the key removed
  - · The red Emergency Stop button in the off position at both ground and platform controls
  - · Wheels chocked
  - · All external AC power supply disconnected from the machine

About This Section

Most of the procedures in this section should only be performed by a trained service professional in a suitably equipped workshop. Select the appropriate repair procedure after troubleshooting the problem.

Perform disassembly procedures to the point where repairs can be completed. Then to re-assemble, perform the disassembly steps in reverse order.

Symbols Legend

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

⊙ Indicates that a specific result is expected after performing a series of steps.

⊠ Indicates that an incorrect result has occurred after performing a series of steps.

Platform Controls

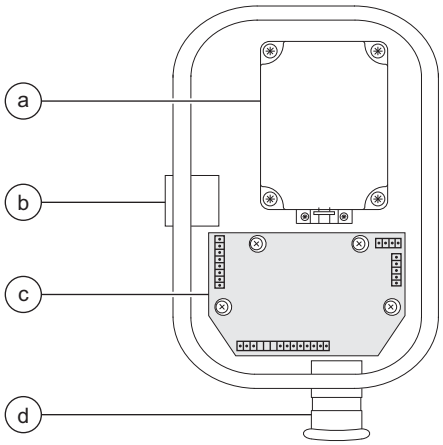
REV A

The platform controls, used to operate the machine from the platform or while standing on the ground, can also be used to tune the performance of the machine.

Moving the joystick or activating a button sends a signal to the Electronic Control Module (ECM). When the ECM is in the function mode, the platform controls are used to operate the various machine functions. When the ECM is in the speed tuning mode (PS is shown in the diagnostic display window) or software configuration mode (SC is shown in the diagnostic display window), the platform controls are used to adjust the function speed parameters or the machine configuration.

The platform controls consist of an electronic circuit board, joystick, alarm, buttons and LEDs.

For further information or assistance, consult the Genie Industries Service Department.



a joystick controller JC1
b alarm H1
c platform controls circuit board U3
d red Emergency Stop button P2

1-1 Circuit Boards

How to Remove the Platform Controls Circuit Board

1 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

2 Remove the retaining fasteners securing the bottom to the platform control box. Open the control box.

3 Remove the ties securing the wire harness.

4 Remove the alarm and red Emergency Stop button from the platform control box.

5 Carefully disconnect the three wire harness connectors from the platform controls circuit board.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

6 Carefully remove the platform controls circuit board retaining fasteners.

7 Carefully remove the platform controls circuit board from the platform control box lid.

1-2 Controller Adjustments

Platform lift speed, stowed drive speed, raised drive speed and slow drive speed are adjustable to compensate for wear in the hydraulic pump and drive motors.

The function speeds are determined by the percentage of total controller output.

For further information or assistance, consult the Genie Industries Service Department.

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

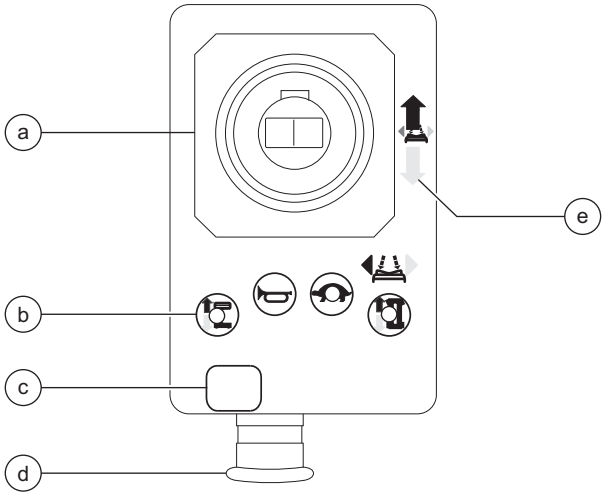
⚠DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills could result in death or serious injury.

Note: Select a test area that is firm, level and free of obstructions.

How to Determine the Software Revision Level

1 Remove the platform controls from the platform.

2 Place the platform controls close to the diagnostic display on the power unit side of the machine.



a joystick controller JC1
b lift function select button BN9
c diagnostic display window
d red Emergency Stop button P2
e yellow arrow

3 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

⊙ Result: The diagnostic display at the platform controls will show the battery condition. See 1-3, *How to Determine the Battery Voltage*.

4 Press the lift function select button.

5 Slowly move the joystick in the direction indicated by the yellow arrow.

⊙ Result: The software revision level will appear in the diagnostic display.

6 Push in the red Emergency Stop button to the off position at both the ground and platform controls and turn the key switch to the off position.

How to Adjust the Lift Speed

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

1 Pull out the red Emergency Stop button to the on position at the ground controls.

2 Push in the red Emergency Stop button to the off position at the platform controls.

3 Turn the key switch to platform control.

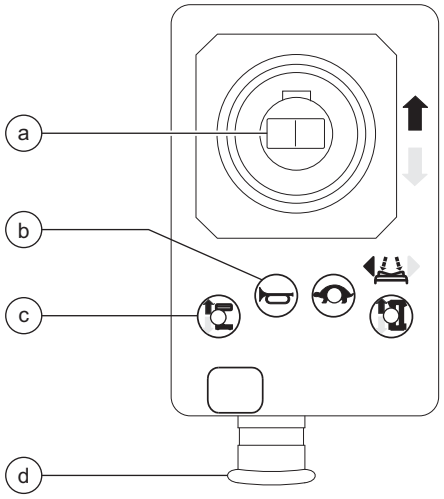
4 At the platform controls, press and hold the lift function select and horn buttons and pull out the red Emergency Stop button to the on position.

⊙ Result: The diagnostic display will show "PS."

5 Release the lift function select and horn buttons.

⊙ Result: The diagnostic display will show the maximum lift speed percentage.

6 Press the lift function select button.



a joystick controller JC1 with thumb steering rocker SW6
b horn button BN5
c lift function select button BN9
d red Emergency Stop button P2

7 Use the steering thumb rocker switch on the joystick to increase or decrease the maximum lift speed percentage. Refer to Section 2, *Specifications*, for function speeds.

8 Turn the key switch to the off position.

Note: Any change in software settings will not take effect until the key switch is turned to the off position.

How to Adjust the Stowed Drive Speed

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

1 Pull out the red Emergency Stop button to the on position at the ground controls.

2 Push in the red Emergency Stop button to the off position at the platform controls.

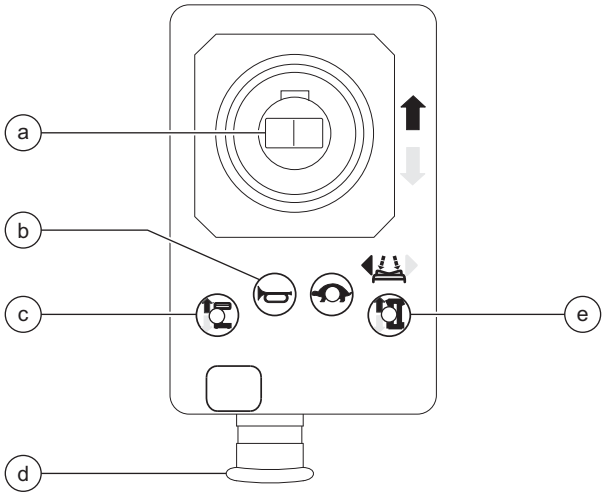
3 Turn the key switch to platform control.

4 At the platform controls, press and hold the lift function select and horn buttons and pull out the red Emergency Stop button to the on position.

⊙ Result: The diagnostic display will show "PS."

5 Release the lift function select and horn buttons.

⊙ Result: The diagnostic display will show the maximum lift speed percentage.



a joystick controller JC1 with thumb steering rocker SW6
b horn button BN5
c lift function select button BN9
d red Emergency Stop button P2
e drive function select button BN8

6 Press the drive function select button.

⊙ Result: The diagnostic display will show the stowed drive speed percentage.

7 Use the steering thumb rocker switch on the joystick to increase or decrease the stowed drive speed percentage. Refer to Section 2, *Specifications*, for function speeds.

8 Turn the key switch to the off position.

Note: Any change in software settings will not take effect until the key switch is turned to the off position.

How to Adjust the Raised Drive Speed

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

1 Pull out the red Emergency Stop button to the on position at the ground controls.

2 Push in the red Emergency Stop button to the off position at the platform controls.

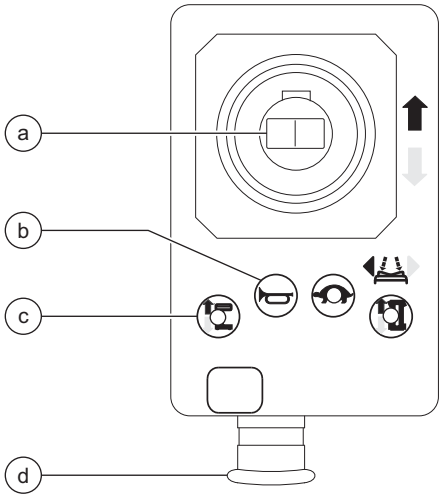
3 Turn the key switch to platform control.

4 At the platform controls, press and hold the lift function select and horn buttons and pull out the red Emergency Stop button to the on position.

⊙ Result: The diagnostic display will show "PS."

5 Release the lift function select and horn buttons.

⊙ Result: The diagnostic display will show the maximum lift speed percentage.



a joystick controller JC1 with thumb steering rocker SW6
b horn button BN5
c lift function select button BN9
d red Emergency Stop button P2

6 Press the drive function select button.

7 Press and hold the horn button.

⊙ Result: The diagnostic display will show the raised drive speed percentage.

8 Use the steering thumb rocker switch on the joystick to increase or decrease the maximum lift speed percentage. Refer to Section 2, *Specifications*, for function speeds.

9 Turn the key switch to the off position.

Note: Any change in software settings will not take effect until the key switch is turned to the off position.

How to Adjust the Slow Drive Speed

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

1 Pull out the red Emergency Stop button to the on position at the ground controls.

2 Push in the red Emergency Stop button to the off position at the platform controls.

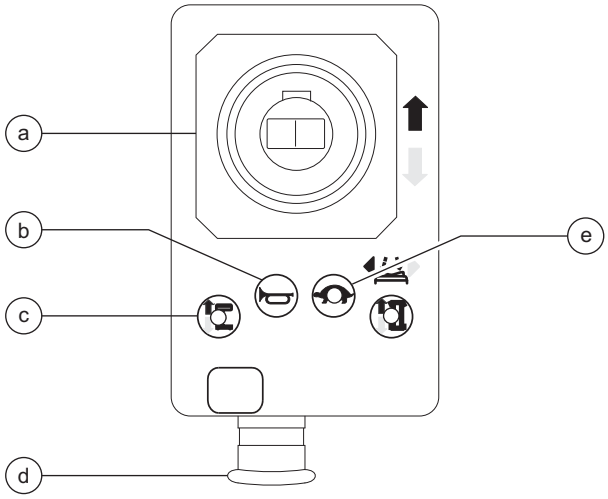
3 Turn the key switch to platform control.

4 At the platform controls, press and hold the lift function select and horn buttons and pull out the red Emergency Stop button to the on position.

⊙ Result: The diagnostic display will show "PS."

5 Release the lift function select and horn buttons.

⊙ Result: The diagnostic display will show the maximum lift speed percentage.



a joystick controller JC1 with thumb steering rocker SW6
b horn button BN5
c lift function select button BN9
d red Emergency Stop button P2
e slow speed select button BN6

6 Press and hold the slow speed select button.

⊙ Result: The diagnostic display will show the slow drive speed percentage.

7 Use the steering thumb rocker switch on the joystick to increase or decrease the stowed high torque drive speed percentage. Refer to Section 2, *Specifications*, for function speeds.

8 Turn the key switch to the off position.

Note: Any change in software settings will not take effect until the key switch is turned to the off position.

1-3 Software Configuration

The Electronic Control Module (ECM) contains programming for all configurations of the Genie GRC. The machine can be adjusted to a different configuration using the buttons at the platform controls.

How to Determine the Software Configuration

1 Remove the platform controls from the platform.

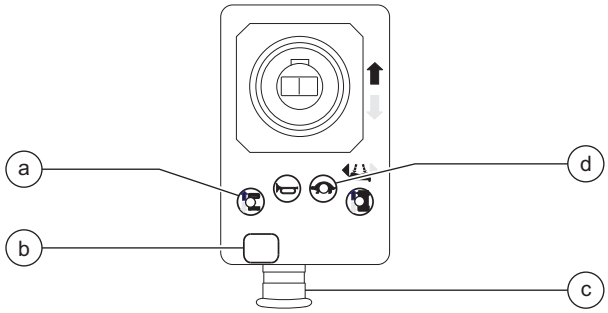
2 Place the platform controls close to the diagnostic display on the power unit side of the machine.

3 Pull out the red Emergency Stop button to the on position at the ground controls.

4 Push in the red Emergency Stop button to the off position at the platform controls.

5 At the platform controls, press and hold the lift function select and speed select buttons, and pull out the red Emergency Stop button to the on position.

⊙ Result: The diagnostic display, at the platform controls and the ECM, will show "SC."



a lift function select button BN9
b diagnostic display
c red Emergency Stop button P2
d drive function select button BN8

6 Release the lift function select and speed select buttons.

⊙ Result: The diagnostic display will show the current configuration.

7 Push in the red Emergency Stop button to the off position at both the ground and platform controls and turn the key switch to the off position.

How to Change the Software Configuration

1 Pull out the red Emergency Stop button to the on position at the ground controls.

2 Push in the red Emergency Stop button to the off position at the platform controls.

3 Turn the key switch to platform control.

4 At the platform controls, press and hold the lift function select and speed select buttons, and pull out the red Emergency Stop button to the on position.

⊙ Result: The diagnostic display, at the platform controls and the ECM, will show "SC."

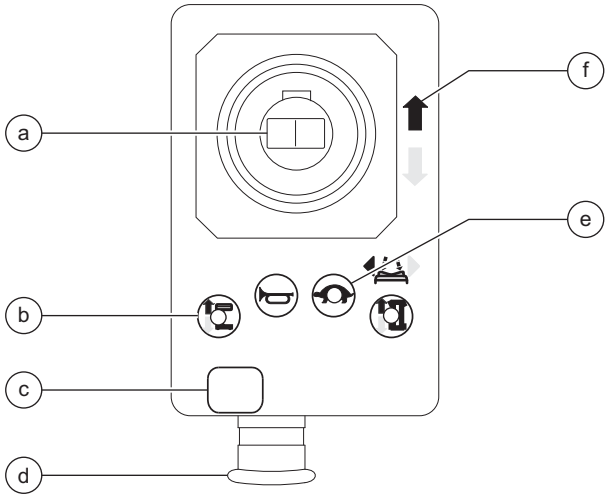
5 Release the lift function select and drive function select buttons.

⊙ Result: The diagnostic display will show the current software configuration.

6 Press the lift function select button.

⊙ Result: The 'tens' digit setting will be activated and the current 'tens' setting will flash in the diagnostic display. Use the steering thumb rocker switch on the joystick to increase or decrease the value. See 1-3, *Machine Configuration Code Chart* for configuration settings.

7 Press and hold the lift function select button for a minimum of 3 seconds to set the 'tens' value.



a joystick controller JC1 with thumb steering rocker SW6
b lift function select button BN9
c diagnostic display
d red Emergency Stop button P2
e slow speed select button BN6
f blue arrow

8 Press the slow speed select button.

⊙ Result: The 'ones' digit setting will be activated and the current 'ones' setting will flash in the diagnostic display. Use the steering thumb rocker switch on the joystick to increase or decrease the value. See 1-3, *Machine Configuration Code Chart* for configuration settings.

9 Press and hold the slow speed select button for a minimum of 3 seconds or until the 'ones' setting stops flashing.

10 Turn the key switch to the off position.

Note: Any change in software settings will not take effect until the key switch is turned to the off position.

Machine Configuration Code Chart

A mark in the four right columns indicates that the machine configuration, at left, includes this feature.

Machine Function Code at Diagnostic Display	Non-slab Option	Motion Alarm	Lift/Drive Cut Out
05	•		•
29	•		•
30	•	•	•
31	•	•	•

Machine Option / Feature Definitions

Non-slab Option: For the GRC to function correctly, each model is configured with this option.
Motion Alarm: The motion alarm will sound when operating any function.

Lift/Drive Cut Out: In addition to an alarm sounding, lift and drive functions are disabled when the platform is raised above the down limit switch and the incline of the chassis exceeds the rating on the serial plate. Configured on all machines.

Battery Drain Alarm: When the machine is turned on and in the stowed position, and no function is activated for 2 minutes, an alarm will sound once every 3 seconds.
When this option is configured, a dot in the diagnostic display window will remain continuously illuminated when the ECM is in the 'SC' mode OR when the platform up function is activated.

How to Activate the Battery Drain Alarm Option

1 Pull out the red Emergency Stop button to the on position at the ground controls.

2 Push in the red Emergency Stop button to the off position at the platform controls.

3 Turn the key switch to platform control.

4 At the platform controls, press and hold the lift function select and speed select buttons, and pull out the red Emergency Stop button to the on position.

⊙ Result: The diagnostic display, at the platform controls and the ECM, will show "SC."

5 Release the lift function select and speed select buttons.

⊙ Result: The diagnostic display will show the current software configuration.

6 Press the slow speed select button.

⊙ Result: The 'ones' digit setting will be activated and the current 'ones' setting will flash in the diagnostic display.

7 Press the horn button.

⊙ Result: A dot, located at the lower right of the diagnostic display window, will become illuminated. This indicates that the battery drain alarm option has been activated.

8 Press and hold the speed select button for a minimum of 3 seconds or until the 'ones' setting stops flashing.

9 Turn the key switch to the off position.

Note: To deactivate the battery drain alarm option on a machine which has the option activated, repeat this procedure. When the ECM is in the 'SC' mode and the option is deactivated, there will not be an illuminated dot in the diagnostic display window.

How to Determine the Battery Voltage

The diagnostic display on the platform controls is used to indicate the battery voltage at all times when the machine is in normal operation.

Limp Mode: If the battery level falls to less than 17.8V DC, the single bar in the diagnostic display will be flashing and machine drive speed is limited to that of the raised drive speed. Refer to Section 2, *Specifications*.

the battery level is 22.6V DC or higher

the battery level is 21.6 to 22.5V DC

the battery level is 20.7 to 21.5V DC

the battery level is 19.7 to 20.6V DC

the battery level is 17.8 to 19.6V DC

the battery level is less than 17.8V DC

Platform Components

REV A

2-1 Platform

How to Remove the Platform

1 Disconnect the platform controls from the control cable at the platform, and remove the platform controls from the platform. Set the platform controls to the side.

2 Carefully cut all cable ties securing the control cable to the platform.

NOTICE Component damage hazard. The control cable can be damaged if cut while removing the cable ties.

3 Attach a lifting strap of suitable capacity from an overhead crane and center it around the platform railing. Support the platform. Do not apply any lifting pressure.

4 Remove the fasteners securing the platform to the mast and set the fasteners to the side. Remove the platform from the machine.

⚠WARNING Crushing hazard. The platform could become unbalanced and fall when removed from the machine. A properly centered lifting strap is essential when removing the platform from the machine.

Note: During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

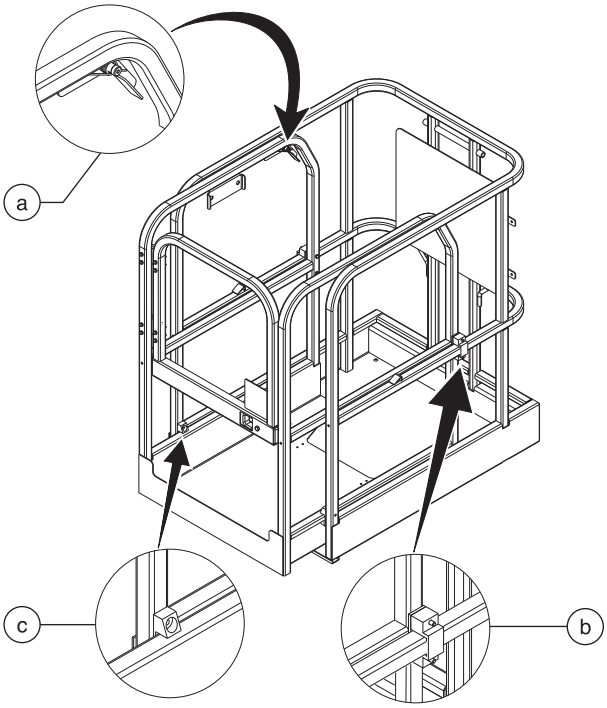
2-2 Platform Extension

How to Remove the Platform Extension Deck

1 Remove the fasteners and spring securing the extension deck latch to the extension deck. Set the fasteners, spring and the latch to the side.

2 Remove the fasteners securing the platform wear pads to the main deck at the steer end of the machine. Set the fasteners and the wear pads to the side.

3 Remove the fasteners securing the extension deck guide blocks to the extension deck and main deck. Set the fasteners and the guide blocks to the side.



a extension deck latch
b platform wear pad
c extension deck guide block

4 Attach a lifting strap of suitable capacity from an overhead crane and center it around the extension deck railing. Remove the extension deck from the machine.

⚠WARNING Crushing hazard. The extension deck could become unbalanced and fall when removed from the machine. A properly centered lifting strap is essential when removing the extension deck from the machine.

Note: During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

Mast Components

REV A

3-1
Mast

How to
Remove the Mast Assembly

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

Note: Perform this procedure on a firm, level surface.

Note: Perform this procedure with the mast in the stowed position.

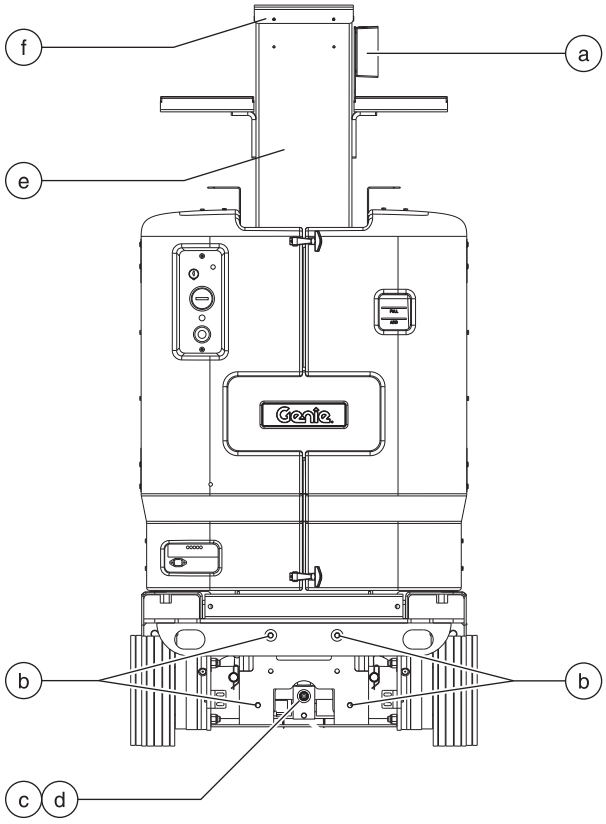
1 Remove the Platform. See 2-1, *How to Remove the Platform*.

2 Tag and disconnect the power to platform wire harness at the quick disconnect near the Electronic Control Module (ECM).

3 Tag and disconnect the up limit switch cable near the Electronic Control Module (ECM).

4 Tag, disconnect and plug the lift cylinder hose at the function manifold. Cap the fitting.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.



a AC outlet box junction box
b mast retaining fasteners
c lift cylinder coil
d lift cylinder solenoid valve
e mast
f mast cover

5 Remove the fasteners securing the lower rear access cover to the chassis and remove the cover. Set the cover and the fasteners to the side.

6 Tag and disconnect the wire harness from the platform down valve coil at the base of the lift cylinder.

7 Remove the retaining nut securing the platform down coil to the platform down solenoid valve and remove the coil. Set the coil and retaining nut to the side.

8 Remove the platform down solenoid valve from the lift cylinder. Set the valve to the side and plug the cylinder port.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

9 Remove the fasteners securing the top mast cover to the top of the mast. Set the cover and fasteners to the side.

10 Using an overhead crane, attach a sling equipped with the appropriate sized hooks to the lifting eyes located inside the mast assembly. Support the mast. Do not apply any lifting pressure.

11 Working at the non-steer end of the lower chassis, remove the mast retaining fasteners and set the fasteners to the side.

12 Carefully pull the cables and hydraulic hoses free while removing the mast from the machine.

⚠WARNING Crushing hazard. The mast assembly could become unbalanced and fall if not properly supported when removed from the machine.

NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

13 Place the mast assembly on a suitable structure capable of supporting it.

How to Disassemble the Mast

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

1 Remove the mast. See 2-1, *How to Remove the Platform.*

2 Remove the mast. See 3-1, *How to Remove the Mast Assembly.*

3 Remove the lift cylinder. See 3-3, *How to Remove the Lift Cylinder.*

4 Remove the mast coil cord. See 3-4, *How to Remove the Mast Coil Cord.*

5 Remove the fasteners securing the AC outlet junction box to the upper half of the mast and remove the junction box. Set the junction box and the fasteners to the side.

6 Remove the fasteners securing the work trays to the upper half of the mast and remove the work trays. Set the trays and the fasteners to the side.

7 Remove the fasteners securing the down limit switch assembly to the limit switch bracket and remove the limit switch assembly. Set the limit switch assembly and the fasteners to the side.

8 With the chassis mount side up,stagger the mast assembly to gain access to the rivets securing the inner wear pads, to the bottom half of the number 2, number 3 and number 4 mast sections.

9 Using a drill, carefully drill out the rivets securing the number 2 inner wear pads to the bottom half of the number 2 mast section, the number 3 inner wear pads to the bottom half of the number 3 mast section and the number 4 inner wear pads to the bottom half of the number 4 mast section. Refer to Illustration 1.

Note: While drilling the rivets out, be careful not drill into the opposing mast section.

Note: While drilling the rivets out, be careful not enlarge the wearpad mounting holes.

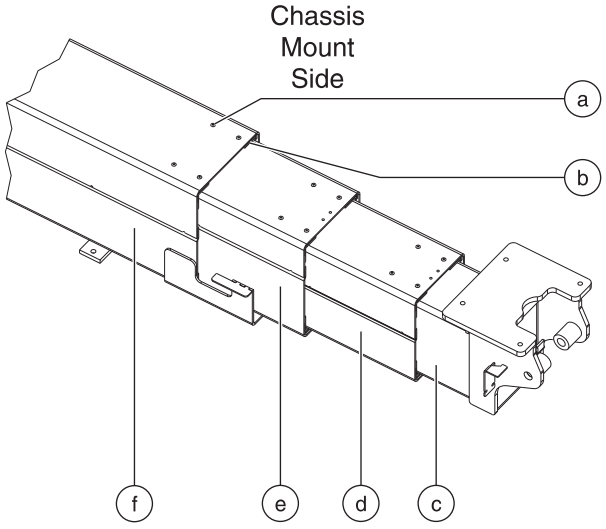


Illustration 1

a rivet
b wear pads
c number 1 mast
d number 2 mast
e number 3 mast
f number 4 mast

10 Attach a lifting strap from an overhead crane to the mast assembly and carefully rotate the mast 180°. Set the mast assembly onto the work table and secure the mast to the table.

⚠WARNING Crushing hazard. The mast assembly could become unbalanced and fall if not properly supported.

Note: During installation, the overhead crane strap will need to be carefully adjusted for proper balancing.

11 Slide the number 4 mast towards the bottom of the number 3 mast and align the upper and lower number 4 mast access holes to the upper and lower rivets on the number 3 mast. Refer to Illustration 2.

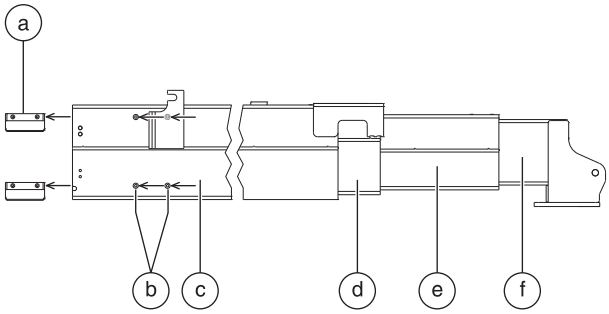


Illustration 2

a wear pads
b rivets
c number 4 mast
d number 3 mast
e number 2 mast
f number 1 mast

12 Using a drill, carefully drill out the rivets securing the number 3 outer wear pads to the top half of the number 3 mast section. Refer to Illustration 2.

Note: While drilling the rivets out, be careful not drill into the number 2 mast section.

Note: While drilling the rivets out, be careful not enlarge the wearpad mounting holes.

13 Using a drill, carefully drill out the rivets securing the number 4 inner wear pads to the bottom half of the number 4 mast section. Refer to Illustration 3

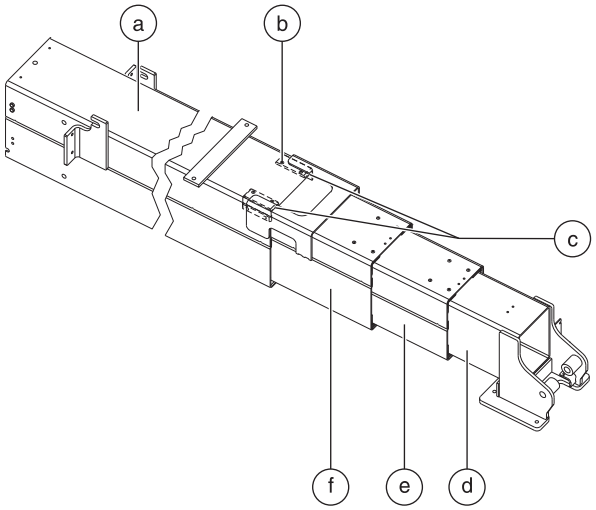


Illustration 3

a number 4 mast
b rivet
c wear pads
d number 1 mast
e number 2 mast
f number 3 mast

Note: While drilling the rivets out, be careful not drill into the number 3 mast section.

Note: While drilling the rivets out, be careful not enlarge the wearpad mounting holes.

14 Attach a lifting strap from an overhead crane to the number 4 mast section and carefully remove the number 4 mast.

⚠WARNING Crushing hazard. The number 4 mast section could become unbalanced and fall if not properly supported when removed from the mast assembly.

Note: During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

15 Slide the number 3 mast towards the bottom of the number 2 mast and align the upper and lower number 3 mast access holes to the upper and lower rivets on the number 2 mast. Refer to Illustration 4.

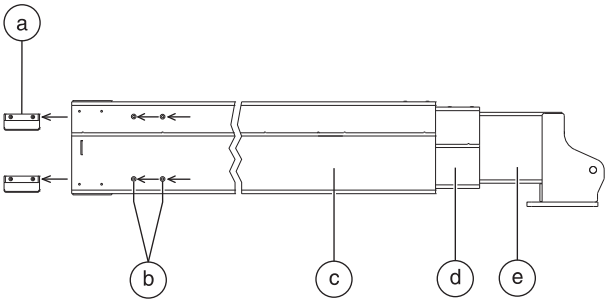


Illustration 4

a wear pads
b rivets
c number 3 mast
d number 2 mast
e number 1 mast

16 Using a drill, carefully drill out the rivets securing the number 2 outer wear pads to the top half of the number 2 mast section. Refer to Illustration 2.

Note: While drilling the rivets out, be careful not drill into the number 2 mast section.

Note: While drilling the rivets out, be careful not enlarge the wearpad mounting holes.

17 Using a drill, carefully drill out the rivets securing the number 3 inner wear pads to the bottom half of the number 3 mast section. Refer to Illustration 5.

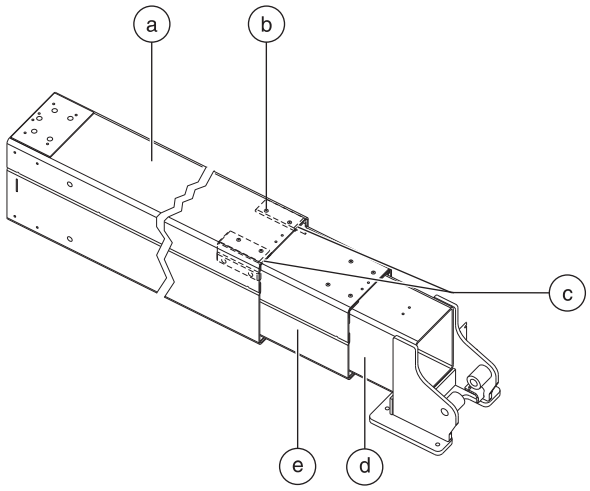


Illustration 5

a number 3 mast
b rivet
c wear pads
d number 1 mast
e number 2 mast

Note: While drilling the rivets out, be careful not drill into the number 2 mast section.

Note: While drilling the rivets out, be careful not enlarge the wearpad mounting holes.

18 Attach a lifting strap from an overhead crane to the number 3 mast section and carefully remove the number 3 mast.

⚠WARNING Crushing hazard. The number 3 mast section could become unbalanced and fall if not properly supported when removed from the mast assembly.

Note: During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

19 Slide the number 2 mast towards the bottom of the number 1 mast and align the upper and lower number 2 mast access holes to the upper and lower rivets on the number 1 mast. Refer to Illustration 6.

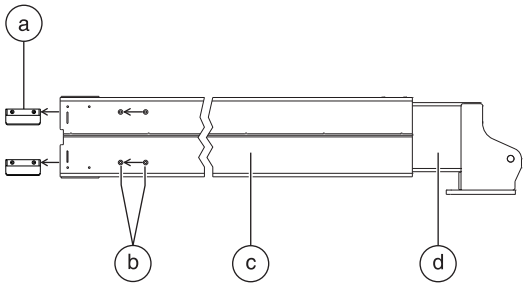


Illustration 6

a wear pads
b rivets
c number 2 mast
d number 1 mast

20 Using a drill, carefully drill out the rivets securing the number 1 outer wear pads to the top half of the number 1 mast section. Refer to Illustration 2.

Note: While drilling the rivets out, be careful not enlarge the wearpad mounting holes.

21 Using a drill, carefully drill out the rivets securing the number 2 inner wear pads to the bottom half of the number 2 mast section. Refer to Illustration 7.

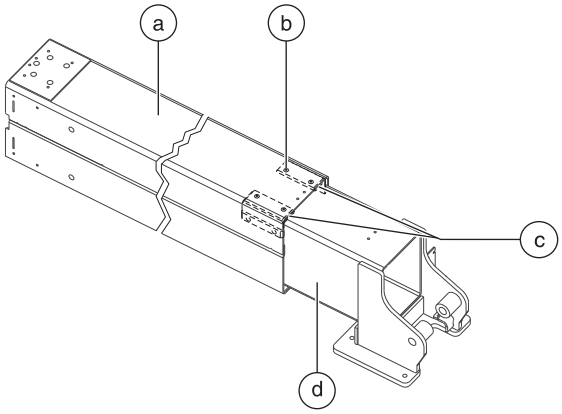


Illustration 7

a number 3 mast
b rivet
c wear pads
d number 1 mast
e number 2 mast

Note: While drilling the rivets out, be careful not drill into the number 1 mast section.

Note: While drilling the rivets out, be careful not enlarge the wearpad mounting holes.

22 Attach a lifting strap from an overhead crane to the number 2 mast section and carefully remove the number 2 mast.

⚠WARNING Crushing hazard. The number 2 mast section could become unbalanced and fall if not properly supported when removed from the mast assembly.

Note: During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

How to Assemble the Mast

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

1 Thoroughly clean all mast sections.

2 Attach a lifting strap from an overhead crane to the number 1 mast, and place the number 1 mast onto a work table capable of supporting a complete mast assembly.

⚠WARNING Crushing hazard. The number 1 mast could become unbalanced and fall if not properly supported.

Note: During installation, the overhead crane strap will need to be carefully adjusted for proper balancing.

3 Secure the number 1 mast to the work table.

4 Using the appropriate rivets, securely install the upper corner wear pads, to the upper half of the number 1 mast. Refer to Illustration1.

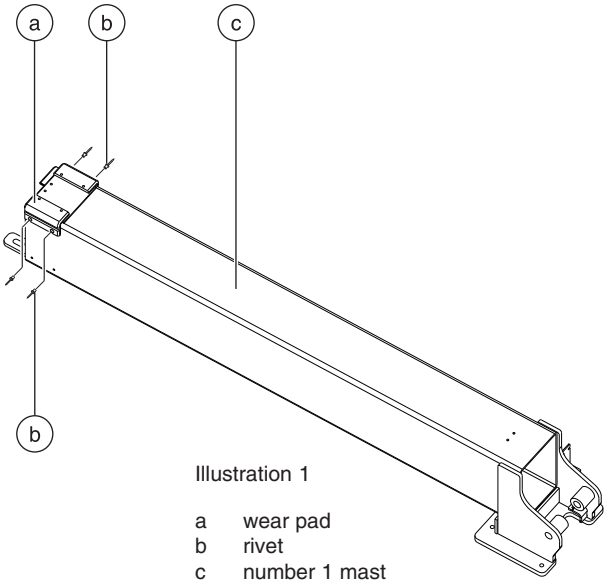


Illustration 1

a wear pad
b rivet
c number 1 mast

5 Attach a lifting strap from an overhead crane to the number 2 mast and carefully slide the number 2 mast onto the number 1 mast, with the cylinder mount brackets facing the work table.

⚠WARNING Crushing hazard. The number 2 mast could become unbalanced and fall if not properly supported.

Note: During installation, the overhead crane strap will need to be carefully adjusted for proper balancing.

6 Slide the lower, inner corner wear pads between the number 2 mast and the number 1 mast. Align the holes on the wear pads to the rivet holes on the lower half of the number 2 mast and secure into place using the appropriate rivets. Refer to Illustration 2.

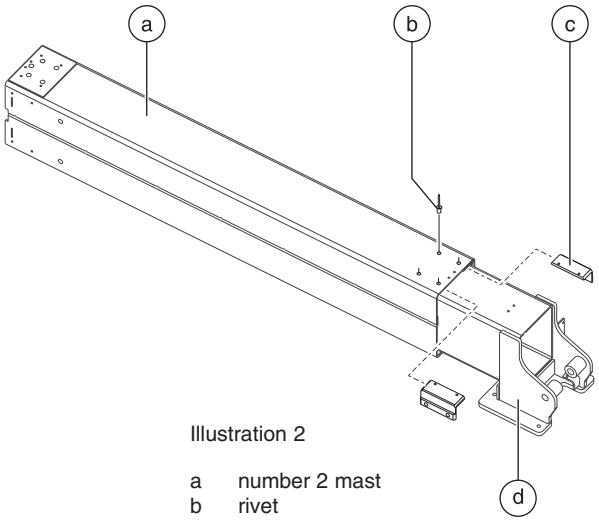


Illustration 2

a number 2 mast
b rivet
c wear pads
d number 1 mast

7 Slide the number 2 mast towards the bottom of the number 1 mast and align the lower number 2 mast access holes to the lower number 1 rivet holes. Refer to Illustration 3.

8 Working at the top of the number 2 mast, carefully slide the lower corner wear pads between the number 2 mast and the number 1 mast. Refer to Illustration 3.

9 Align the the rivet holes on the wear pads to the number 2 mast access holes and to the number 1 mast rivet holes. Refer to Illustration 3.

10 Using the appropriate rivets, securely install the lower corner wear pads, to the lower half of the number 1 mast. Refer to Illustration 3.

Note: After installing the first rivet, move and align the number 2 mast access hole to the second hole on the wear pad and install the second rivet. Refer to Illustration 3.

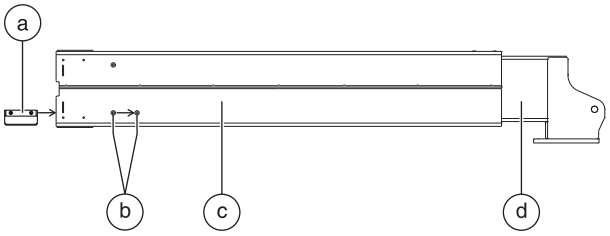


Illustration 3

a wear pad
b rivets
c number 1 mast
d number 2 mast

11 Using the appropriate rivets, securely install the upper corner wear pads, to the upper half of the number 2 mast. Refer to Illustration 4.

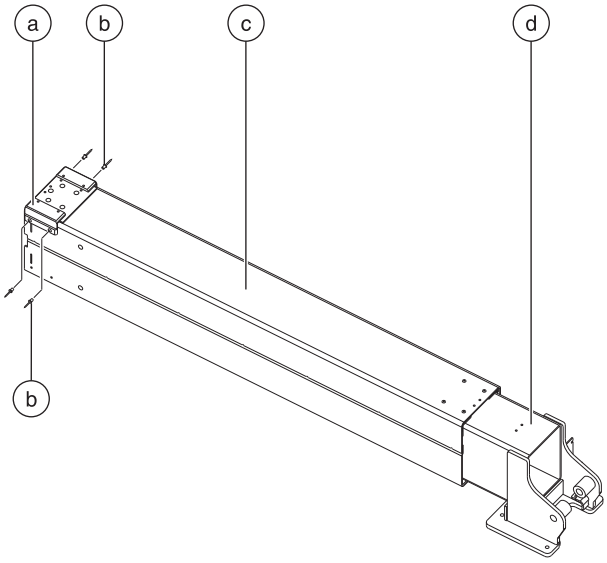


Illustration 4

a wear pad
b rivet
c number 2 mast
d number 1 mast

12 Attach a lifting strap from an overhead crane to the number 3 mast and carefully slide the number 3 mast onto the number 2 mast, with the cylinder mount brackets facing the work table.

⚠WARNING Crushing hazard. The number 3 mast could become unbalanced and fall if not properly supported.

Note: During installation, the overhead crane strap will need to be carefully adjusted for proper balancing.

13 Slide the lower, inner corner wear pads between the number 3 mast and the number 2 mast. Align the holes on the wear pads to the rivet holes on the lower half of the number 3 mast and secure into place using the appropriate rivets. Refer to Illustration 5.

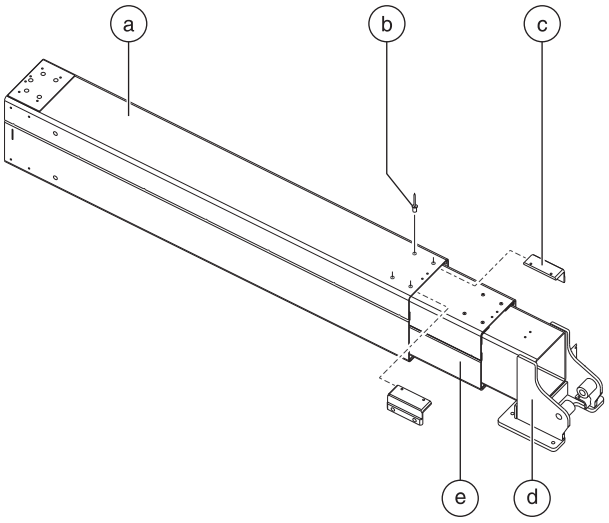


Illustration 5

a number 3 mast
b rivet
c wear pads
d number 1 mast
e number 2 mast

14 Slide the number 3 mast towards the bottom of the number 2 mast and align the lower number 3 mast access holes to the lower number 2 rivet holes. Refer to Illustration 6.

15 Working at the top of the number 3 mast, carefully slide the lower corner wear pads between the number 3 mast and the number 2 mast. Refer to Illustration 6.

16 Align the the rivet holes on the wear pads to the number 3 mast access holes and to the number 2 mast rivet holes. Refer to Illustration 6.

17 Using the appropriate rivets, securely install the lower corner wear pads, to the lower half of the number 2 mast. Refer to Illustration 6.

Note: After installing the first rivet, move and align the number 3 mast access hole to the second hole on the wear pad and install the second rivet. Refer to Illustration 6.

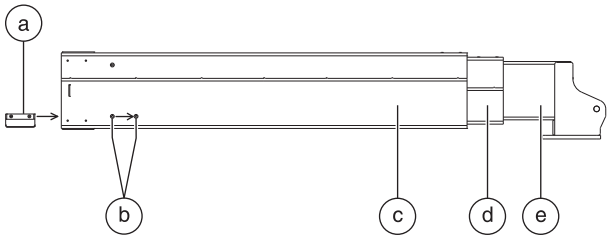


Illustration 6

a wear pad
b rivets
c number 3 mast
d number 2 mast
e number 1 mast

18 Using the appropriate rivets, securely install the upper corner wear pads, to the upper half of the number 3 mast. Refer to Illustration 7.

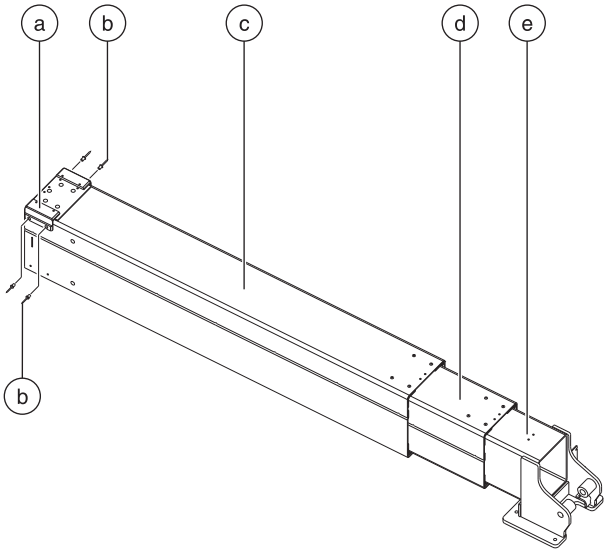


Illustration 7

a wear pad
b rivet
c number 3 mast
d number 2 mast
e number 1 mast

19 Attach a lifting strap from an overhead crane to the number 4 mast and carefully slide the number 4 mast onto the number 3 mast, with the cylinder mount brackets facing the work table.

⚠WARNING Crushing hazard. The number 4 mast could become unbalanced and fall if not properly supported.

Note: During installation, the overhead crane strap will need to be carefully adjusted for proper balancing.

20 Slide the lower, inner corner wear pads between the number 4 mast and the number 3 mast. Align the holes on the wear pads to the rivet holes on the lower half of the number 4 mast and secure into place using the appropriate rivets. Refer to Illustration 8.

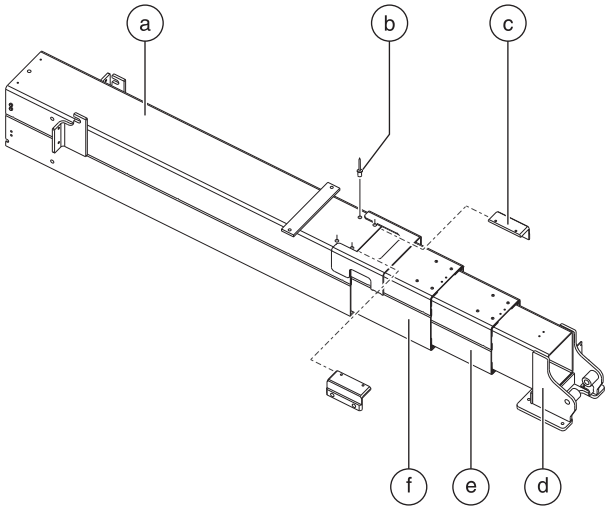


Illustration 8

a number 4 mast
b rivet
c wear pads
d number 1 mast
e number 2 mast
f number 3 mast

21 Slide the number 4 mast towards the bottom of the number 3 mast and align the lower number 4 mast access holes to the lower number 3 rivet holes. Refer to Illustration 9.

22 Working at the top of the number 4 mast, carefully slide the lower corner wear pads between the number 4 mast and the number 3 mast. Refer to Illustration 9.

23 Align the the rivet holes on the wear pads to the number 4 mast access holes and to the number 3 mast rivet holes. Refer to Illustration 6.

24 Using the appropriate rivets, securely install the lower corner wear pads, to the lower half of the number 3 mast. Refer to Illustration 9.

Note: After installing the first rivet, move and align the number 4 mast access hole to the second hole on the wear pad and install the second rivet. Refer to Illustration 9.

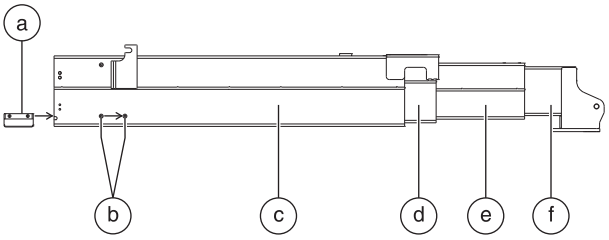


Illustration 9

a wear pad
b rivets
c number 4 mast
d number 3 mast
e number 2 mast
f number 1 mast

25 Attach a lifting strap from an overhead crane to the mast assembly and carefully rotate the mast 180°. Set the mast assemblty onto the work table and secure the mast to the table.

⚠WARNING Crushing hazard. The mast assembly could become unbalanced and fall if not properly supported.

Note: During installation, the overhead crane strap will need to be carefully adjusted for proper balancing.

26 Using Illustration 10 as a guide, stagger the mast assembly.

27 Slide the lower, inner corner wear pads between mast sectiopns1 and 2, 2 and 3 and, 3 and 4. Align the holes on the wear pads to the rivet holes on the lower half of mast sections 2, 3 and 4. Secure the wear pads into place using the appropriate rivets. Refer to Illustration 10.

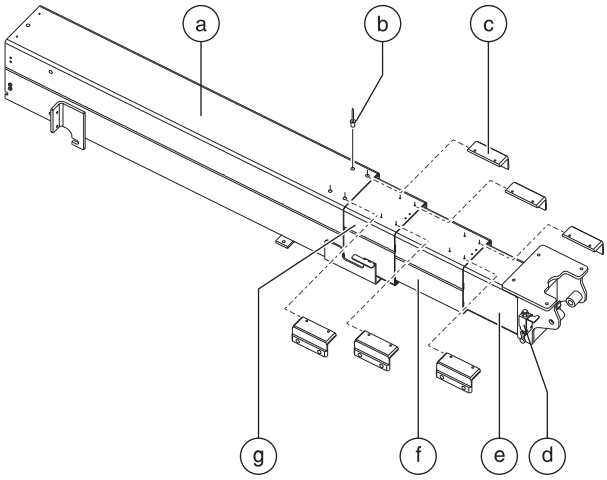


Illustration 10

a number 4 mast
b rivet
c wear pad
d limit switch
e number 1 mast
f number 2 mast
g number 3 mast

28 Carefully collapse the mast assembly.

29 Attach a lifting strap from an overhead crane to the lift cylinder. Working from the lower half of the mast assembly, carefully slide the lift cylinder into the mast assembly, aligning the rod ends of the cylinder, to the cylinder mast mounting brackets at the upper half of the mast assembly.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall if not properly supported.

Note: During installation, the overhead crane strap will need to be carefully adjusted for proper balancing.

30 Working at the upper half of the mast assembly, securely install the lift cylinder nylock nuts onto the lift cylinder. Torque to 300 ft-lbs / 406 Nm.

31 Working from the lower half of the mast assembly, install the mast cylinder pin into the mounting holes of the number 1 mast and the lift cylinder.

32 Install the hair pin clips onto each side of the mast cylinder pin.

33 Securely install the lift cylinder retaining bolt onto the lower cylinder block. Do not over tighten the bolt.

34 Using the appropriate fasteners, install the limit switch assembly onto the lower half of the mast assembly. Do not over tighten the fasteners. Refer to Illustration 10.

35 Securely install the hydraulic lift hose onto the lift cylinder. Refer to the note below for torque specifications.

Note: When installing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

3-2
Wear Pads

Wear pads on the GRC-12 are used to provide a uniform fit between the mast sections, as the mast assembly extends and retracts. Over time, it may be necessary to replace the wear pads to ensure good machine performance.

How to Replace Wear Pads

1 See 3-1, *How to Remove the Mast Assembly* and *How to Disassemble a Mast.*

2 See 3-1, *How to Assemble a Mast.*

3-3
Lift Cylinder

The lift cylinder is equipped with a normally closed solenoid valve to prevent movement in the event of a hydraulic line failure.

How to Remove the Lift Cylinder

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

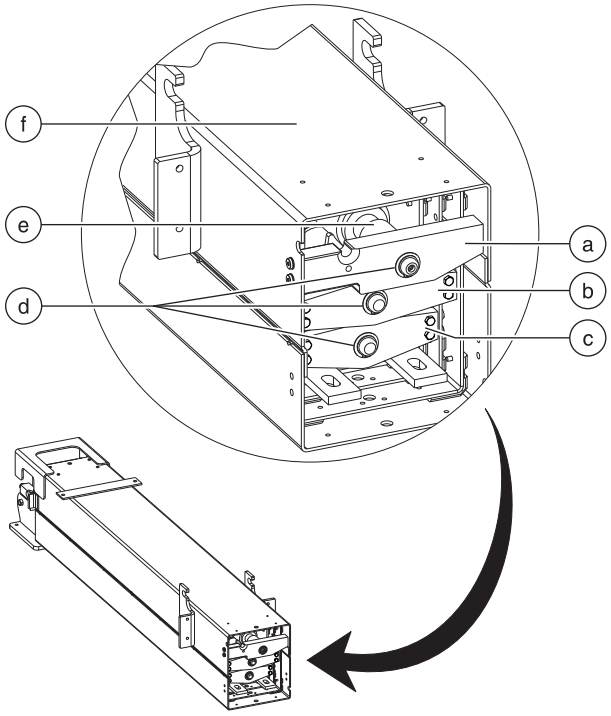
Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the mast. See 3-1, *How to Remove the Mast Assembly.*

2 Remove the nylock nuts securing the lift cylinder, to the cylinder mast mount brackets, located inside the top half of the mast assembly. Set the nylock nuts to the side.

3 Tag, disconnect and plug the hydraulic hose on the lift cylinder. Cap the fittings on the cylinder.

4 Remove the lift cylinder retaining bolt from the lower cylinder block and set to the side.



a number 4 mast cylinder mount bracket
b number 3 mast cylinder mount bracket
c number 2 mast cylinder mount bracket
d nylock nut
e lift cylinder
f mast assembly

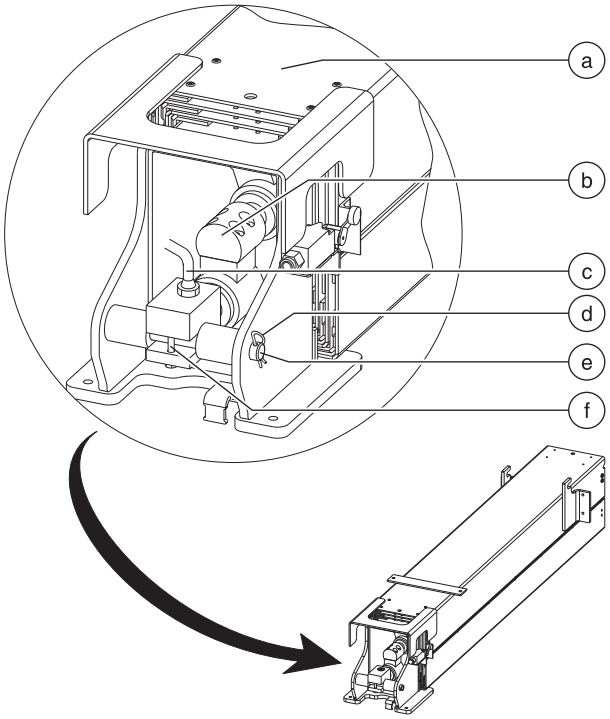
5 Remove the hair pin clips securing the mast cylinder pin to the lower half of the mast assembly. Set the clips to the side.

6 Support the lift cylinder and use a soft metal drift to remove the mast cylinder pin from the lower mast assembly.

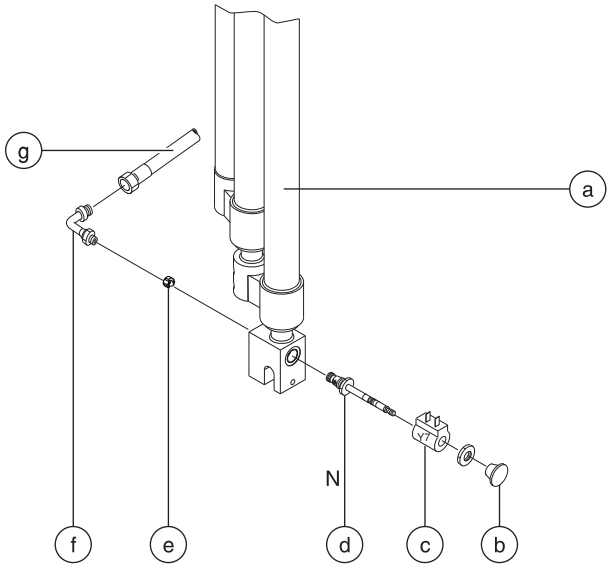
7 Attach a lifting strap from an overhead crane to the cylinder and carefully slide the lift cylinder out of the mast assembly.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall if not properly supported when removed from the mast.

Note: During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.



a lower mast assembly
b lift cylinder
c hydraulic hose
d hair pin clip
e mast cylinder pin
f cylinder retaining bolt



a lift cylinder
b manual lowering valve knob
c coil
d platform down solenoid valve
e orifice
f connector fitting
g hydraulic hose

3-4
Lift Cylinder Wear Block

How to Remove the Lift Cylinder Wear Block

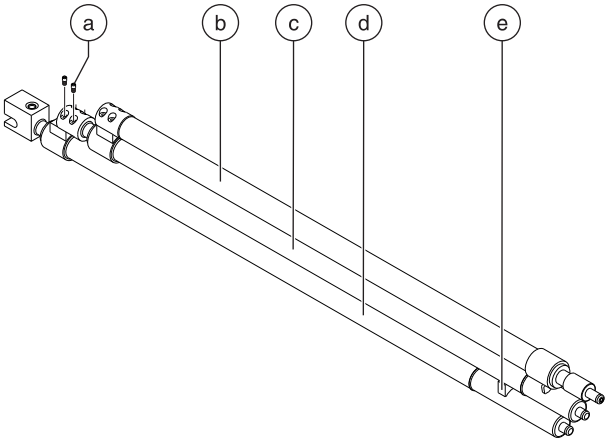
⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

1 Remove the mast. See 3-1, *How to Remove the Mast Assembly.*

2 Remove the mast. See 3-3, *How to Remove the Cylinder.*

3 Working at the barrel end of the cylinders, remove the fasteners securing the number 2 cylinder to the number 1 cylinder.

4 Separate the number 2 cylinder from the number 1 cylinder and remove the cylinder wear block at the rod end of the cylinders.



a cap screw
b number 3 cylinder
c number 2 cylinder
d number 1 cylinder
e cylinder wear block

3-5
Mast Coil Cord

How to Remove the Mast Coil Cord

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

1 Remove the mast. See 3-1, *How to Remove the Mast Assembly.*

2 Loose the strain relief nut at the top of the AC outlet junction box.

3 Remove the cover from the AC outlet junction box. Tag and disconnect the coil cord wires from the control cable wires.

4 Cut the connectors from the coil cord wires and pull the coil cord from the strain relief.

5 Working at the rod end of the mast, cut the zip tie securing the coil cord and the spring to the number 4 cylinder mount bracket.

6 Working at the barrel end of the mast, cut the zip tie securing the coil cord and spring to the "L" bracket.

7 Remove the coil cord and the spring from the mast assembly.

Ground Controls

REV A

4-1
Level Sensor

The Electronic Control Module (ECM) is programmed to deactivate the lift and drive functions and activate an alarm when a signal is received from the level sensor.

The tilt alarm sounds when the incline of the chassis exceeds 1.5° to the side, or 3° to the front or rear.

How to Install and Calibrate the Level Sensor

⚠DANGER Tip-over hazard. Failure to install or calibrate the level sensor as instructed will compromise machine stability and cause the machine to tip over, resulting in death or serious injury. Do not install or calibrate the level sensor other than specified in this procedure.

Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

Note: Perform this procedure with the platform in the stowed position.

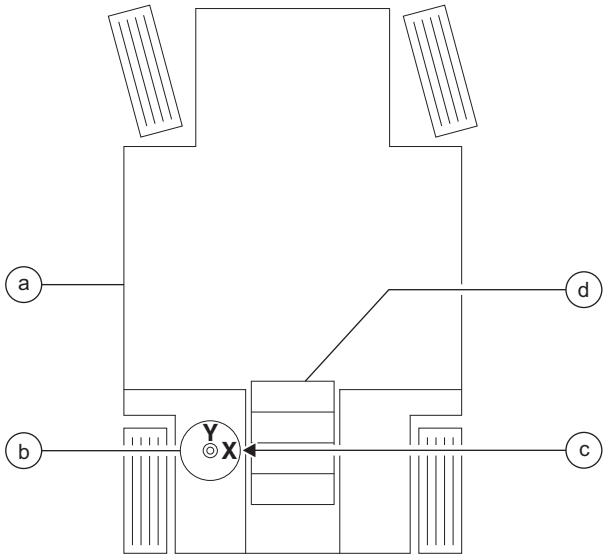
If you are not installing a new level sensor, proceed to step 6.

1 Tag and disconnect the level sensor wire harness from the chassis wire harness.

2 Remove the level sensor adjusting fasteners. Remove the level sensor from the machine.

3 Place the new level sensor onto the level sensor base with the "X" on the level sensor closest to the mast of the machine and the "Y" on the level sensor closest to the steer end of the machine.

⚠DANGER Tip-over hazard. The level sensor must be installed with the "X" on the level sensor closest to the mast of the machine and the "Y" on the level sensor closest to the steer end of the machine. Failure to install the tilt level sensor as instructed could result in the machine tipping over, causing death or serious injury.



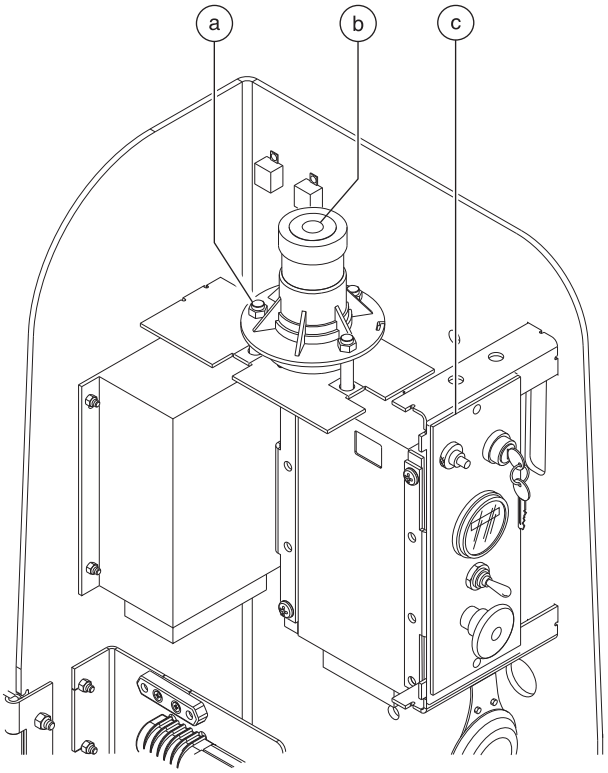
a chassis
b level sensor
c 'X' indicator
d mast

4 Install the level sensor adjusting fasteners through the level sensor and springs, and into the mount. Tighten the fasteners and measure the distance between the level sensor and the level sensor mount.

⊙ Result: The measurement should be approximately 3/8 inch / 10 mm.

5 Connect the chassis wire harness to the level sensor wire harness.

6 Tighten the level sensor adjusting fasteners until the bubble in the top of the level sensor is centered in the calibration circles.



a adjusting fastener
b calibration circles
c ground controls

7 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

⊙ Result: The tilt sensor alarm should not sound.

8 Center a lifting jack under the drive chassis at the ground controls side of the machine.

9 Raise the machine approximately 2 inches / 5 cm.

10 Place a 0.65 x 6 x 6 inch / 1.65 x 15 x 15 cm thick steel block under both wheels at the ground controls side of the machine.

11 Lower the machine onto the blocks.

12 Raise the platform approximately 1 foot / 30 cm.

⊙ Result: The level sensor alarm should not sound.

⊠ Result: The level sensor alarm does sound. Adjust the level sensor retaining fasteners just until the level sensor alarm does not sound.

13 Lower the platform to the stowed position.

14 Raise the machine slightly.

15 Remove the blocks from under both wheels.

16 Lower the machine and remove the jack.

17 Center a lifting jack under the drive chassis at the tank side of the machine.

18 Raise the machine approximately 2 inches / 5 cm.

19 Place a 0.79 x 6 x 6 inch / 2 x 15 x 15 cm thick steel block under both wheels at the tank side of the machine.

20 Lower the machine onto the blocks.

21 Raise the platform approximately 1 foot / 30 cm.

⊙ Result: The platform should stop and an alarm should sound.

⊠ Result: The platform does not stop or the level sensor alarm does not sound. Adjust the level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.

22 Lower the platform to the stowed position.

23 Raise the machine slightly.

24 Remove the blocks from under both wheels.

25 Lower the machine and remove the jack.

26 Center a lifting jack under the drive chassis at the steer end of the machine.

27 Raise the machine approximately 2 inches / 5 cm.

28 Place a 2.18 x 6 x 6 inch / 5.54 x 15 x 15 cm thick steel block under both wheels at the steer end of the machine.

29 Lower the machine onto the blocks.

30 Raise the platform approximately 1 foot / 30 cm.

⊙ Result: The level sensor alarm should not sound.

⊠ Result: The level sensor alarm does sound. The level sensor is faulty and must be replaced. Repeat this procedure beginning with step 1.

31 Raise the machine slightly.

32 Remove the blocks from under both wheels.

33 Lower the machine and remove the jack.

34 Center a lifting jack under the drive chassis at the non-steer end of the machine.

35 Raise the machine approximately 2 inches / 5 cm.

36 Place a 2.4 x 6 x 6 inch / 6.1 x 15 x 15 cm thick steel block under both wheels at the non-steer end of the machine.

37 Raise the platform approximately 1 foot / 30 cm.

⊙ Result: The platform should stop and an alarm should sound.

⊠ Result: The platform does not stop or the level sensor alarm does not sound. The level sensor is faulty and must be replaced. Repeat this procedure beginning with step 1.

38 Lower the platform to the stowed position.

39 Raise the machine slightly.

40 Remove the blocks from under both wheels.

41 Lower the machine and remove the jack.

Hydraulic Pump

REV A

5-1
Function Pump

The hydraulic pump is attached to the motor which makes up the hydraulic power unit.

How to Test the Hydraulic Pump

Note: When removing a hose assembly or fitting, the fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Tag, disconnect and plug the high pressure hydraulic hose from the hydraulic pump.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the high pressure port on the pump.

3 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

4 Activate the platform up function from the ground controls.

⊙ Result: If the pressure gauge reads 3200 psi / 221 bar, immediately stop. The pump is good.

⊙ Result: If pressure fails to reach 3200 psi / 221 bar, the pump is bad and will need to be serviced or replaced.

NOTICE Component damage hazard. There is no relief valve in the hydraulic pump and the pump can be damaged if the pressure is allowed to exceed 3200 psi / 221 bar. When testing the pump, activate the pump in one second intervals until 3200 psi / 221 bar is confirmed. Do not over-pressurize the pump.

5 Remove the pressure gauge and reconnect the hydraulic hose. Torque to specification.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

How to Remove the Hydraulic Pump

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Tag, disconnect and plug the hydraulic supply hard line at the pump. Cap the fitting on the pump.

2 Tag, disconnect and plug the high pressure hose at the pump. Cap the fitting on the pump.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

3 Remove the pump mounting bolts. Carefully remove the pump.

⚠DANGER Tip-over hazard. After replacing the hydraulic pump, it is critical to return the function speed settings to original factory specifications. Failure to restore the machine to original factory specifications could cause the machine to tip over, resulting in death or serious injury.

Function Manifold

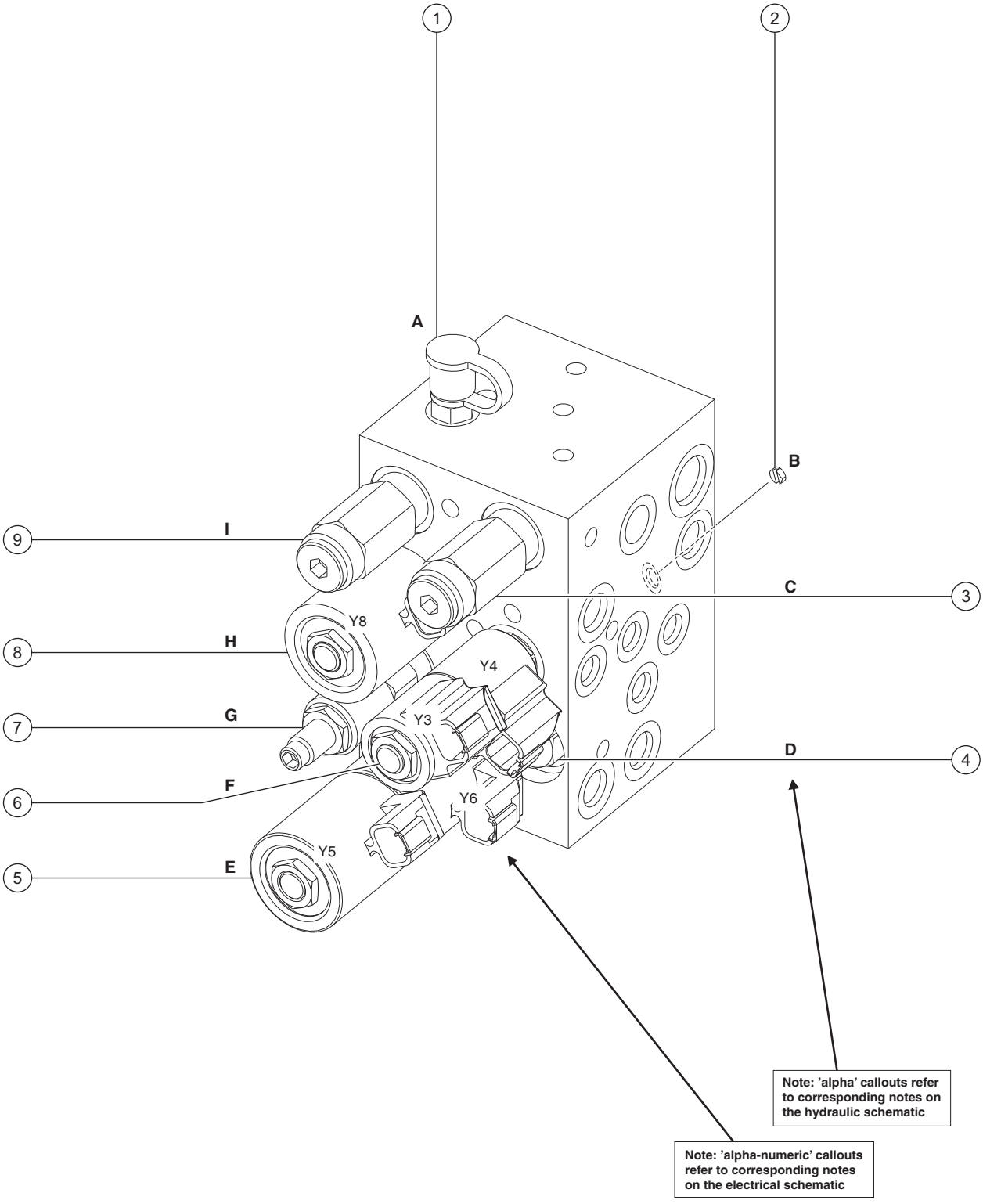
REV A

6-1
Function Manifold Components

The function manifold is mounted next to the hydraulic power unit.

Index No.	Description	Schematic Item	Function	Torque
—	Coil nut (items E, F and H)			5 ft-lbs / 7 Nm
1	Diagnostic nipple	A	Testing	
2	Check disc	B	Steer circuit	18 ft-lbs / 24 Nm
3	Relief valve, 1800 to 3500 psi / 124 to 241 bar	C	Lift relief	20 ft-lbs / 27 Nm
4	Check valve, 10 psi / 0.7 bar	D	Drive circuit	20 ft-lbs / 27 Nm
5	Solenoid valve, 3 position 4 way	E	Drive forward/reverse	25 ft-lbs / 34 Nm
6	Solenoid valve, 3 position 4 way	F	Steer left/right	25 ft-lbs / 34 Nm
7	Flow regulator and relief valve, 0.75 gpm / 2.8 L/min, 1500 psi / 103 bar	G	Steer circuit	26 ft-lbs / 35 Nm
8	Solenoid valve, 2 position 4 way	H	Platform up	25 ft-lbs / 34 Nm
9	Relief valve, 3500 psi / 241 bar maximum	I	System relief	20 ft-lbs / 27 Nm

REV A FUNCTION MANIFOLD

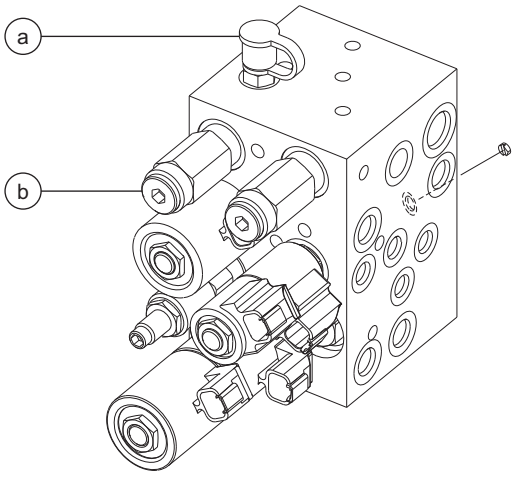


6-2
Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

Note: Be sure that the hydraulic oil level is at the FULL mark on the hydraulic tank.

1 Locate the system relief valve on the function manifold (item I).



a test port
b system relief valve

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold (schematic item A).

3 Chock both sides of the wheels at the steer end of the machine.

4 Remove the platform controls from the platform.

Note: Perform this test from the ground with the platform controls. Do not stand in the platform.

5 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

6 Press and hold the function enable switch.

7 Move and hold the joystick fully in either direction while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.

8 Turn the machine off. Hold the system relief valve with a wrench and remove the cap (schematic item I).

9 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.

⚠ DANGER Tip-over hazard. Failure to adjust the relief valves to specification could result in the machine tipping over, causing death or serious injury. Do not adjust the relief valve pressures higher than specifications.

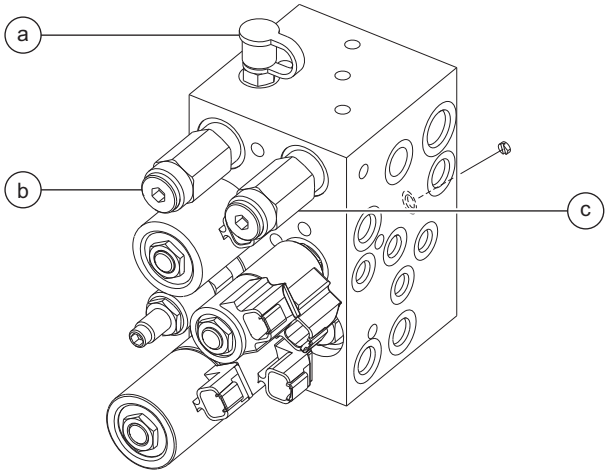
10 Install the relief valve cap.

11 Repeat steps 5 through 7 to confirm the relief valve pressure.

How to Adjust the Platform Lift Relief Valve

Note: Be sure that the hydraulic oil level is at the FULL mark on the hydraulic tank.

1 Locate the system relief valve on the function manifold (item I).



a test port
b system relief valve
c lift relief valve

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold (schematic item A).

3 Chock both sides of the wheels at the steer end of the machine.

4 Remove the platform controls from the platform.

Note: Perform this test from the ground with the platform controls. Do not stand in the platform.

5 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

6 Press and hold the function enable switch.

7 Move and hold the joystick fully in either direction while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.

8 Turn the machine off. Hold the system relief valve with a wrench and remove the cap (hydraulic schematic item I).

9 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.

⚠ DANGER Tip-over hazard. Failure to adjust the relief valves to specification could result in the machine tipping over, causing death or serious injury. Do not adjust the relief valve pressures higher than specifications.

10 Install the relief valve cap.

11 Repeat steps 4 through 7 to confirm the relief valve pressure.

12 Place maximum rated load into the platform. Secure the load to the platform. Refer to Section 2, *Specifications*.

13 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

14 Hold the lift relief valve with a wrench and remove the cap (schematic item C).

15 While activating the platform up function, adjust the internal hex socket clockwise, just until the platform fully raises.

16 Fully lower the platform.

17 Add an additional 50 pounds / 22.7 kg to the platform. Secure the additional weight.

18 Attempt to raise the platform.

⊙ Result: The power unit should **not** be able to lift the platform.

⊠ Result: If the power unit lifts the platform, adjust the internal hex socket counterclockwise until the platform will not raise.

19 Install the relief valve cap.

20 Remove the weight from the platform.

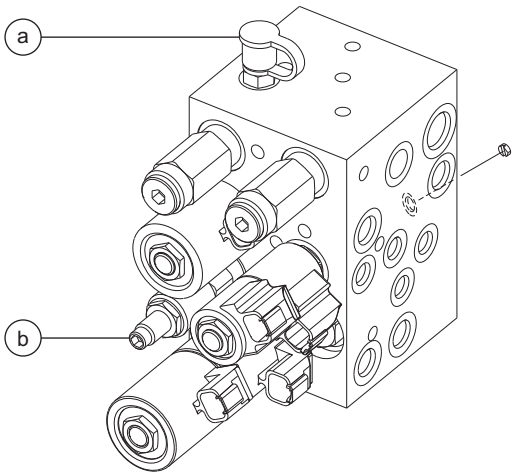
21 Bleed the hydraulic system by raising the platform to full height. If the pump cavitates or the platform fails to reach full height, add hydraulic oil until the pump is functioning correctly. Do not overfill the hydraulic tank.

NOTICE Component damage hazard. Do not continue to operate the machine if the hydraulic pump is cavitating.

How to Adjust the Steer Relief Valve

Note: Be sure that the hydraulic oil level is at the FULL mark on the hydraulic tank.

1 Locate the steer relief valve on the function manifold (schematic item G).



a test port
b steer relief valve

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port (schematic item A) on the function manifold.

3 Remove the platform controls from the platform.

Note: Perform this test from the ground with the platform controls. Do not stand in the platform.

4 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

5 Activate the function enable switch and press and hold the steer thumb rocker switch to the right. Allow the wheels to completely turn to the right. Continue holding the switch while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.

6 Press and hold the steer thumb rocker switch to the left. Allow the wheels to completely turn to the left. Continue holding the switch while observing the pressure reading on the pressure gauge.

7 Turn the machine off. Hold the steer relief valve stem with a wrench and loosen the locknut (schematic item G).

8 Adjust the internal valve stem. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.

NOTICE Component damage hazard. Do not adjust the relief valve pressures higher than specifications.

9 Tighten the locknut.

10 Repeat steps 5 through 6 to confirm the relief valve pressure.

6-3 Valve Coils

How to Test a Coil

A properly functioning coil provides an electromagnetic force which operates the solenoid valve. Critical to normal operation is continuity within the coil. Zero resistance or infinite resistance indicates the coil has failed.

Since coil resistance is sensitive to temperature, resistance values outside specification can produce erratic operation. When coil resistance decreases below specification, amperage increases. As resistance rises above specification, voltage increases.

While valves may operate when coil resistance is outside specification, maintaining coils within specification will help ensure proper valve function over a wide range of operating temperatures.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Note: If the machine has been in operation, allow the coil to cool at least 3 hours before performing this test.

1 Tag and disconnect the wiring from the coil to be tested.

2 Test the coil resistance using a multimeter set to resistance (Ω). Refer to the Valve Coil Resistance Specification table.

⊠ Result: If the resistance is not within the adjusted specification, plus or minus 10%, replace the coil.

Valve Coil Resistance Specification

Note: The following coil resistance specifications are at an ambient temperature of 68°F / 20°C. As valve coil resistance is sensitive to changes in air temperature, the coil resistance will typically increase or decrease by 4% for each 18°F / -7.7°C that your air temperature increases or decreases from 68°F / 20°C.

Valve Coil Resistance Specifications

Description	Specification
Solenoid valve, 3 position 4 way 20V DC with diode (schematic items E)	18 to 21Ω
Solenoid valve, 3 position 4 way 20V DC with diode (schematic item F)	25 to 28Ω
Solenoid valve, 2 position 4 way 20V DC with diode (schematic item H)	18 to 21Ω
Solenoid valve, 2 position 2 way N.C. with manual override 12V DC with diode (schematic item N)	7.5 to 10.5Ω

How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its coils. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Test the coil for resistance. See 6-3, *How to Test a Coil.*

2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

Note: The battery should read 9V DC or more when measured across the terminals.

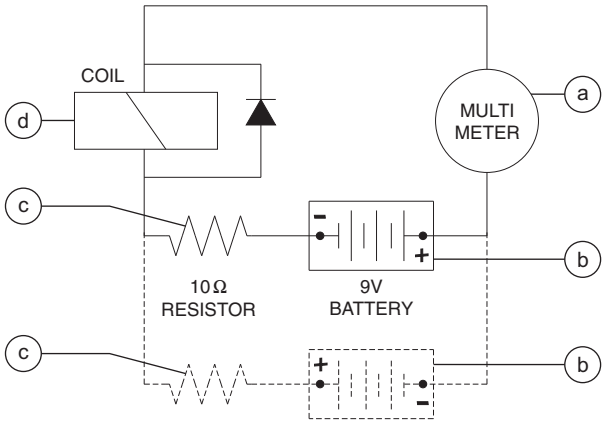
Resistor, 10Ω
Genie part number 27287

3 Set a multimeter to read DC amperage.

Note: The multimeter, when set to read DC amperage, should be capable of reading up to 800 mA.

4 Connect the negative lead to the other terminal on the coil.

Note: If testing a single-terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.



a multimeter
b 9V DC battery
c 10Ω resistor
d coil

Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V battery. Note and record the current reading.

6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

⊙ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.

⊠ Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

Hydraulic Tank

REV A

7-1 Hydraulic Tank

The primary functions of the hydraulic tank are to cool and deaerate the hydraulic fluid during operation. It utilizes an internal suction strainer for the pump supply line and has an external return line filter.

How to Remove the Hydraulic Tank

NOTICE Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

Note: When removing a hose assembly or fitting, the fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

Note: Perform this procedure with the platform in the stowed position.

1 Tag, disconnect and plug the hydraulic supply hard line at the pump. Cap the fitting on the pump. Remove the hard line from the tank.

2 Tag, disconnect and plug the return hard line at the hydraulic filter. Cap the fitting on the filter.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

3 Remove the hydraulic tank retaining fasteners and remove the hydraulic tank from the machine.

Torque specifications	
Hydraulic tank retaining fasteners, dry	35 in-lbs 4 Nm
Hydraulic tank retaining fasteners, lubricated	26 in-lbs 2.9 Nm

Steer Axle Components

REV A

8-1
Yoke and Drive Motor

How to Remove the Yoke and Drive Motor Assembly

Note: When removing a hose assembly or fitting, the fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Block the wheels at the non-steer end of the machine.

2 Remove the cotter pin from the wheel castle nut at the steer end of the machine.

Note: Always replace the cotter pin with a new one when removing the castle nut.

3 Loosen the wheel castle nut. Do not remove it.

4 Center a lifting jack under the drive chassis at the steer end of the machine.

5 Raise the machine approximately 6 inches / 15 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis could fall if not properly supported.

6 Remove the wheel castle nut. Remove the wheel.

7 Tag, disconnect and plug the hydraulic hoses on the drive motor. Cap the fittings on the drive motor.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

NOTICE Component damage hazard. Hoses can be damaged if they are kinked or pinched.

8 Support and secure the yoke assembly to an appropriate lifting device.

9 Remove the retaining fastener from the steer link at the yoke assembly.

Note: Observe and note the quantity and location of the spacers, when disconnecting the steer link from the yoke assembly.

10 Remove the retaining fastener from the rear of the yoke pivot shaft.

Note: The pivot shaft retaining fastener is located below the main deck.

11 Lower the yoke assembly out of the chassis.

⚠CAUTION Bodily injury hazard. The yoke/motor assembly may fall if not properly supported when removed from the machine.

How to Remove a Drive Motor

1 Block the wheels at the non-steer end of the machine.

2 Remove the cotter pin from the wheel castle nut of the motor to be removed at the steer end of the machine.

Note: Always replace the cotter pin with a new one when removing the castle nut.

3 Loosen the wheel castle nut. Do not remove it.

4 Center a lifting jack under the drive chassis at the steer end of the machine.

5 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis could fall if not properly supported.

6 Remove the wheel castle nut. Remove the wheel.

7 Tag, disconnect and plug the hydraulic hoses on the drive motor. Cap the fittings on the drive motor.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

NOTICE Component damage hazard. Hoses can be damaged if they are kinked or pinched.

8 Remove the drive motor mounting fasteners. Remove the motor.

Torque specifications

Drive motor mounting fasteners, dry	75 ft-lbs 101.7 Nm
Drive motor mounting fasteners, lubricated	56 ft-lbs 76.3 Nm

8-2
Steer Cylinder

How to
Remove the Steer Cylinder

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Block the wheels at the non-steer end of the machine.

2 Remove the steer cylinder hose guard bracket from the machine.

3 Remove the pin retaining fasteners from the steer cylinder barrel-end pivot pin. Remove the pin.

Note: Observe and note the quantity and location of the spacers when removing the pivot pin.

4 Remove the pin retaining fasteners from the steer cylinder rod-end pivot pin. Remove the pin.

Note: Observe and note the quantity and location of the spacers when removing the pivot pin.

5 Remove the steer cylinder from the machine.

6 Tag, disconnect and plug the hydraulic hoses from the steer cylinder. Cap the fittings.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

NOTICE Component damage hazard. Hoses can be damaged if they are kinked or pinched.

8-3
Steer Bellcrank

How to
Remove the Steer Bellcrank

1 Remove the steer cylinder. See 8-2, *How to Remove the Steer Cylinder.*

2 Center a lifting jack under the drive chassis at the steer end of the machine.

3 Raise the machine approximately 14 inches / 36 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis could fall if not properly supported.

4 Turn the yokes fully to one side of the machine.

5 Remove the fasteners securing the bell crank to the steer yoke.

Note: Observe and note the quantity and location of the spacers between the bellcrank and the steer links.

6 Turn the yokes fully to the opposite side of the machine.

7 Remove the fasteners securing the bell crank to the steer yoke.

Note: Observe and note the quantity and location of the spacers between the bellcrank and the steer links.

8 Remove the bellcrank from the machine.

Note: Observe and note the quantity and location of the spacers between the bellcrank and the steer links.

Non-steer Axle Components

REV A

9-1
Drive Brake

How to Remove a Drive Brake

Note: When removing a hose assembly or fitting, the fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Block the wheels at the steer end of the machine.

2 Remove the cotter pin from the wheel castle nut at the non-steer end of the machine.

Note: Always replace the cotter pin with a new one when removing the castle nut.

3 Loosen the wheel castle nut. Do not remove it.

4 Center a lifting jack under the drive chassis at the non-steer end.

5 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis could fall if not properly supported.

6 Remove the wheel castle nut. Remove the wheel.

7 Tag, disconnect and plug the hydraulic hose from the brake. Cap the fitting on the brake.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

8 Place a lifting jack under the brake for support.

9 Remove the fasteners that attach the brake to the drive chassis. Remove the brake.

⚠CAUTION Crushing hazard. The brake will fall if not properly supported when the mounting fasteners are removed.

Torque specifications

Brake mounting fasteners, dry	75 ft-lbs 102 Nm
Brake mounting fasteners, lubricated	56 ft-lbs 76 Nm

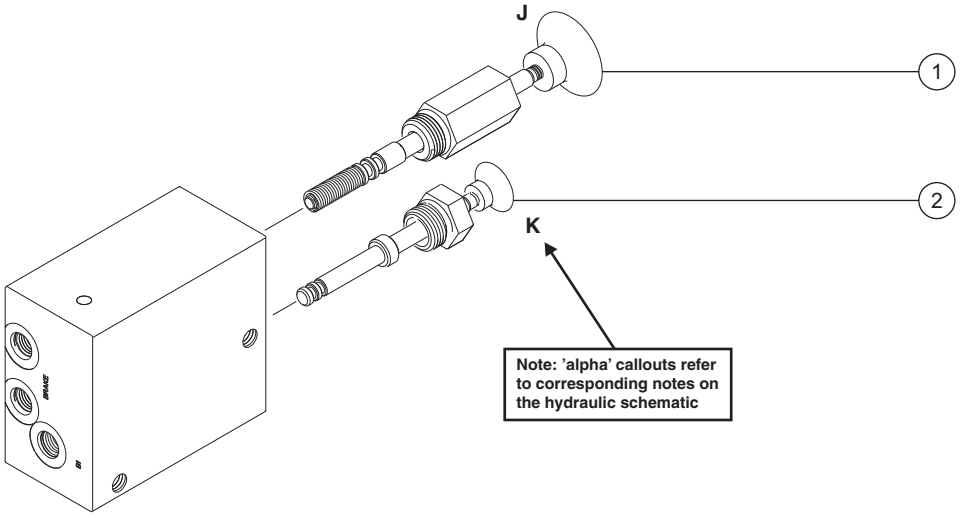
REV A

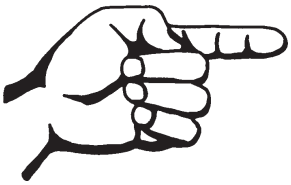
Brake Release Hand Pump Components

10-1
Brake Release Hand Pump Components

The brake release hand pump manifold is mounted behind the hydraulic power unit.

Index No.	Description	Schematic Item	Function	Torque
1	Hand pump	J	Manual brake release	30 ft-lbs / 41 Nm
2	Needle valve, pilot operated	K	Manual brake release enable	45-50 in-lbs / 5 Nm





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Fault Codes

Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Platform in the stowed position
  - Key switch in the off position with the key removed
  - The red Emergency Stop button in the off position at both ground and platform controls
  - Wheels chocked
  - All external AC power supply disconnected from the machine

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠DANGER Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

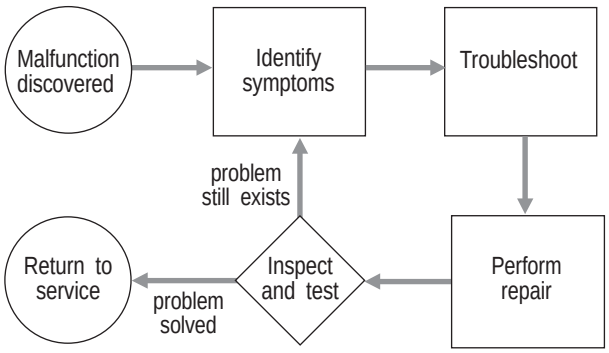
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

FAULT CODES

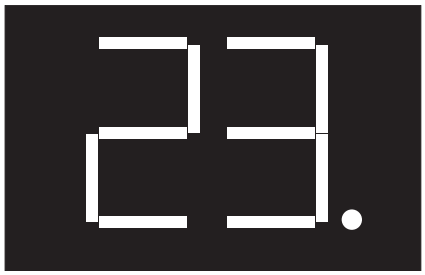
About This Section

When a malfunction is discovered, the fault code chart in this section will help a service professional pinpoint the cause of the problem. To use this section, basic hand tools and certain pieces of test equipment are required—voltmeter, ohmmeter, pressure gauges.

General Repair Process



LED Diagnostic Readout



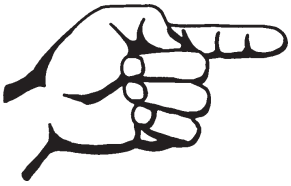
The diagnostic readout displays numerical codes that provide information about the machine operating status and about malfunctions. The dot to the right of the numbers remain on when a fault code is displayed.

The codes listed in the Fault Code Chart describe malfunctions and can aid in troubleshooting the machine by pinpointing the area or component affected.

Fault Code Chart

REV A

Fault Code	Problem	Possible Causes	Solution
01	Internal ECM error.	EPROM not programmed.	Replace ECM.
02	ECM/Platform communication error.	Malfunctioning control cable OR malfunctioning platform controls.	Troubleshoot control cable OR troubleshoot platform controls.
03	Undefined platform DIP switch settings.	DIP switch settings incorrect.	Correct DIP switch settings.
12	Chassis up/down toggle closed at start up.	Malfunctioning up/down switch.	Troubleshoot up/down switch.
18	Pothole guard failure.	Malfunctioning pothole switch OR obstruction in pothole guard linkage.	Troubleshoot pothole switch OR remove obstruction.
19	Limit switch failure.	Malfunctioning limit switch OR wire disconnected from limit switch.	Troubleshoot limit switch OR inspect wire connection.
42	Platform left turn switch fault.	Malfunctioning steer left microswitch.	Troubleshoot steer left microswitch.
43	Platform right turn switch fault.	Malfunctioning steer right microswitch.	Troubleshoot steer right microswitch.
46	Platform drive enable switch fault.	Malfunctioning drive enable switch.	Troubleshoot drive enable switch.
47	Platform joystick fault.	Joystick potentiometer not centered.	Verify potentiometer setting.
52	Forward coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
53	Reverse coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
54	Up coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
55	Down coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
56	Steer right coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
57	Steer left coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
58	Brake coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
59	Series/parallel coil fault.	DIP switch settings are incorrect.	Troubleshoot and correct DIP switch settings.
68	Low battery voltage.	Batteries discharged.	Charge batteries.
88	ECM has been erased.	Static strap may be missing from the machine.	Replace static strap.



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Schematics

Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section. An illustration legend precedes each group of drawings.

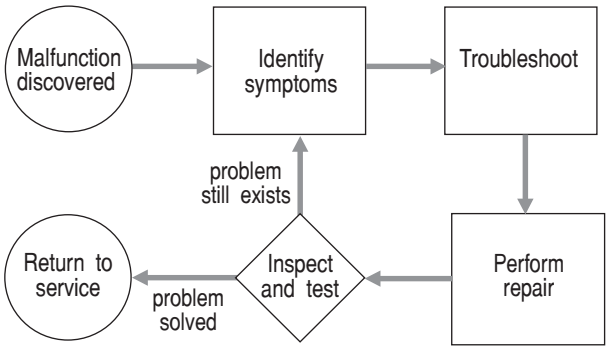
Electrical Schematics

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Hydraulic Schematics

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

General Repair Process



Electrical Schematic Abbreviation and Wire Color Legends

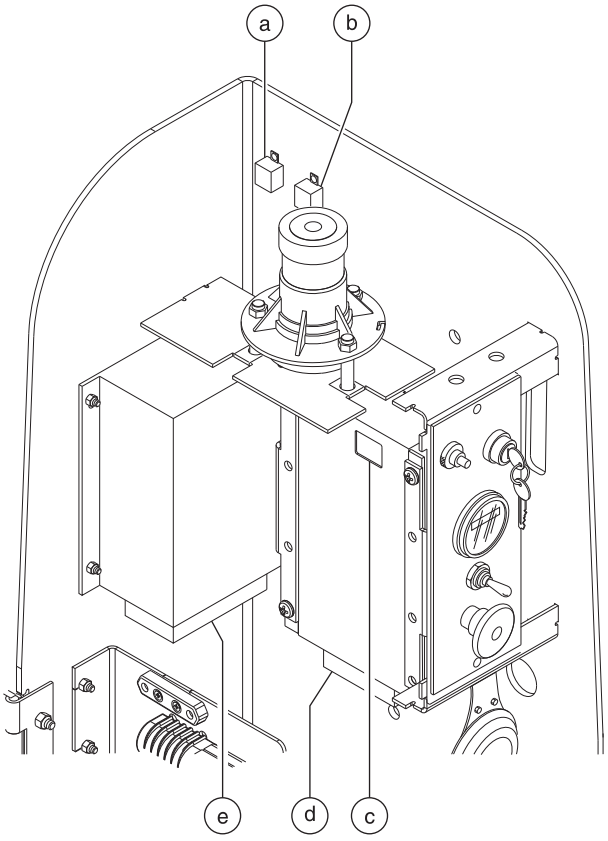
REV A

ELECTRICAL COMPONENT LEGEND	
Item	**Description**
B5	Battery
BN	Button
	BN5 = Horn BN6 = High torque BN8 = Drive enable BN9 = Lift enable
CB2	Circuit breaker, 7A
CR	Control relay
	CR5 = Horn relay (with H2 option) CR48 = Power relay to U5 (e-stop)
D7	Voltage regulator (Platform controls circuit board)
EN4	Enclosure - AC outlet box
F6	Fuse, 275A
FB	Flashing beacons
G	Gauge
	G6 = Hour meter G8 = Diagnostic display
GND	Ground
H	Horn or alarm
	H1 = Horn H2 = Automotive-style horn (option) H5 = Multifunction alarm
JC1	Joystick controller
KS1	Key switch
L	LED or light
	L16 = Lift L17 = Drive L21 = High torque
LS	Limit switch
	LS6 = Platform down LS7 = Pothole LS8 = Pothole
M5	Hydraulic power unit
NC	Normally closed
NO	Normally open
NCHO	Normally closed held open
NOHC	Normally open held closed
P	Power switch
	P1 = Emergency Stop button at ground controls P2 = Emergency Stop button at platform controls
QD	Quick disconnect
	QD1 = Battery quick disconnect QD3 = Control cable to ground QD4 = Control cable to platform
SW	Switch
	SW5 = Function enable SW6 = Steer left/right
S7	Tilt level sensor
TS66	Platform up/down toggle switch
U	Electronic component
	U3 = Platform controls printed circuit board U5 = Electronic control module U6 = Motor controller U9 = Battery charger U13 = Voltage inverter (option)
Y	Valve coil
	Y3 = Steer right Y4 = Steer left Y5 = Drive reverse Y6 = Drive forward Y7 = Platform down Y8 = Platform up

WIRE COLOR LEGEND	
Color	**Description**
BK	Black
BK/WH	Black/White
BL	Blue
BN	Brown
GN	Green
GN/BK	Green/Black
GN/YL	Green/Yellow
GY	Gray
LB	Light Blue
OR	Orange
OR/BK	Orange/Black
PP	Purple
RD	Red
RD/BK	Red/Black
WH	White
WH/BK	White/Black
YL	Yellow

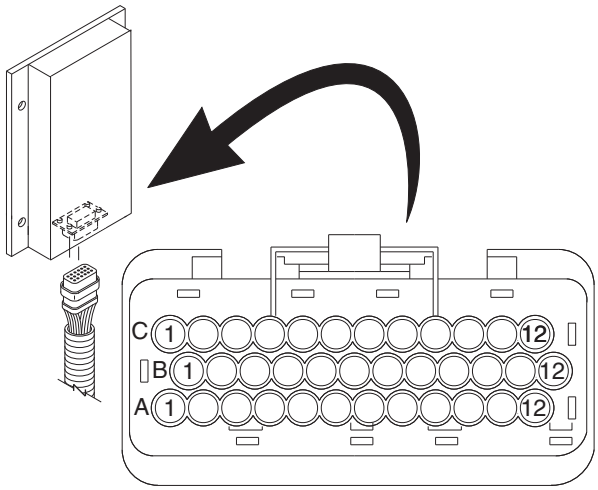
Relay Layout and ECM Pin-out Legend

REV A



Relay layout

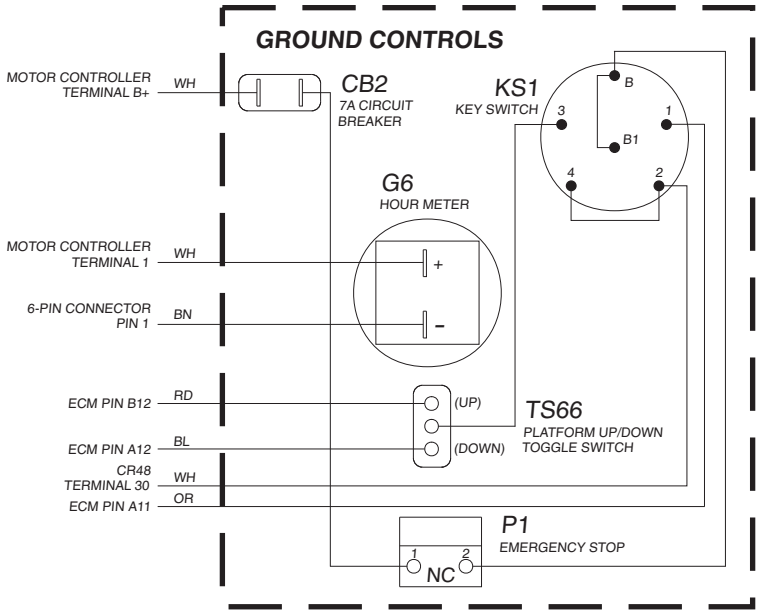
a auto-style horn CR5 (option)
b power relay CR48
c ECM diagnostic display window
d electronic control module (ECM) U5
e motor controller U6

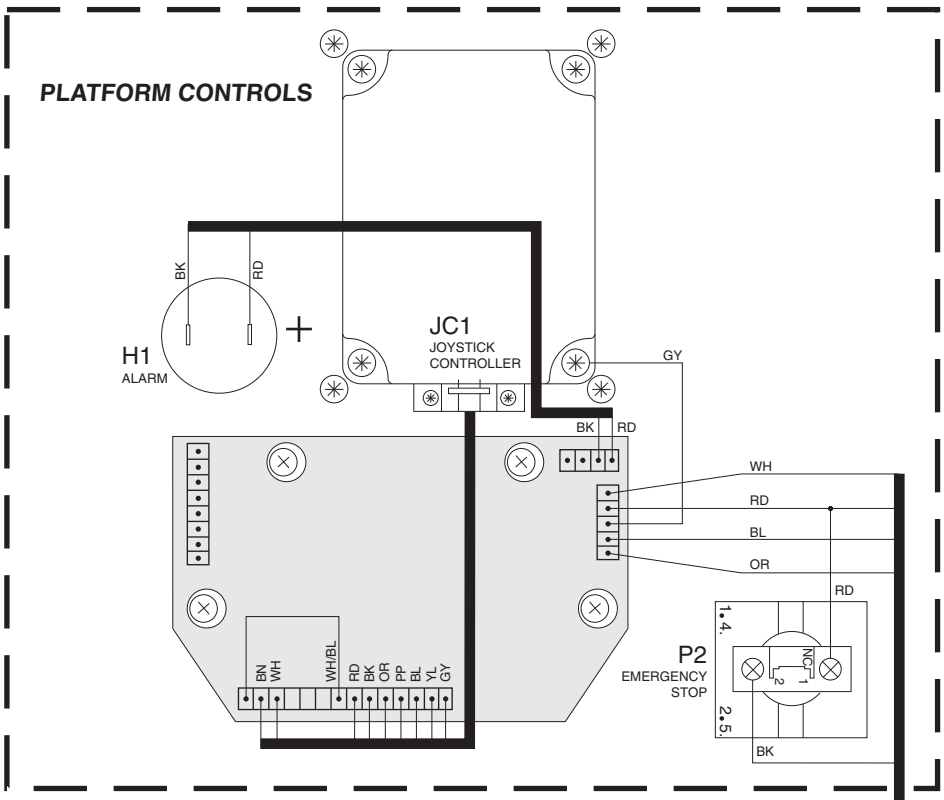


ECM PIN-OUT LEGEND	
Item	**Description**
A1	Flashing beacon FB1 (output)
A2	Ground from platform controls (input) (White wire at platform controls)
A3	Plug
A4	Power from platform controls to ECM (input) (Red wire at platform controls)
A5	Level sensor power S7 (output)
A6	Platform up coil Y8 (output)
A7	Drive reverse coil Y5 (output)
A8	Motor controller U6, terminal 1
A9	Motor controller U6, terminal 3
A10	Overload sensor PS2 (input)
A11	Key switch to platform control (input)
A12	Platform down TS66 (input)
B1	Platform data link (high) (input) (Blue wire at platform controls)
B2	Plug
B3	ECM ground (output)
B4	Plug
B5	Plug
B6	Platform down coil Y7 (output)
B7	Steer left coil Y4 (output)
B8	Automotive-style horn H2 (option) (output)
B9	Multi-function alarm H5 (output)
B10	Pothole limit switch (input)
B11	Drive enable power/up limit switch (input)
B12	Platform up TS66 (input)
C1	Platform data link (low) (input) (Orange wire at platform controls)
C2	Power to ECM (input)
C3	Plug
C4	Plug
C5	Jumper
C6	Drive forward coil Y6 (output)
C7	Steer right coil Y3 (output)
C8	Parallel coil Y1 (not available on GS-1530/32 and GS-1930/32)
C9	Work light L30 (option)
C10	Jumper
C11	Level sensor signal S7 (input)
C12	Down limit switch LS66 (input)

Wiring Diagram

Ground and Platform Controls REV A

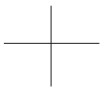




Electrical Symbols Legend

REV A

Wire with description or color



Circuits crossing no connection

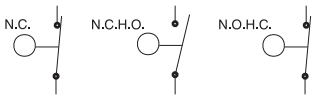
Diode

Circuit connection

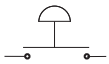
Connector

Hour meter

Flashing beacon

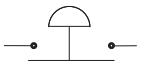


Limit switch



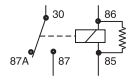
Button or switch

Toggle switch



Emergency Stop button

Circuit breaker

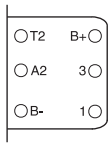


Control relay

Fuse

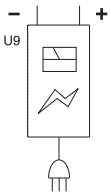
Horn or alarm

LED



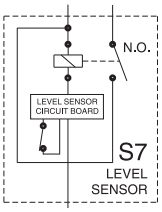
Motor controller

Motor

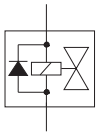


Battery charger

6V DC battery



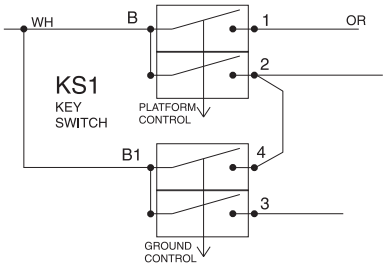
Level sensor



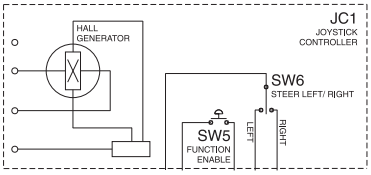
Solenoid valve with diode

Capacitor

Noise suppression inductor



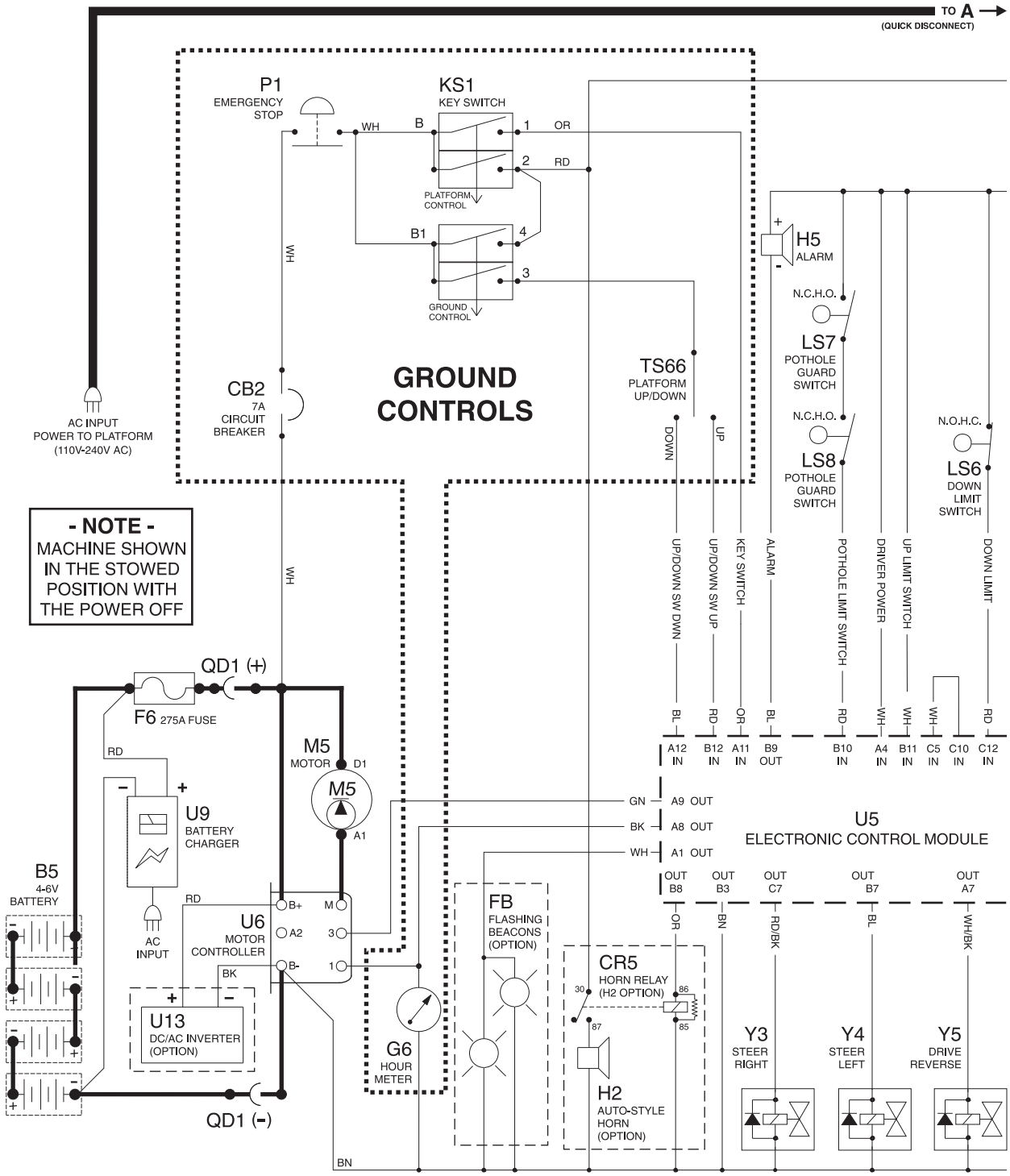
Key switch



Joystick

Electrical Schematic

Part 1 of 2 REV A

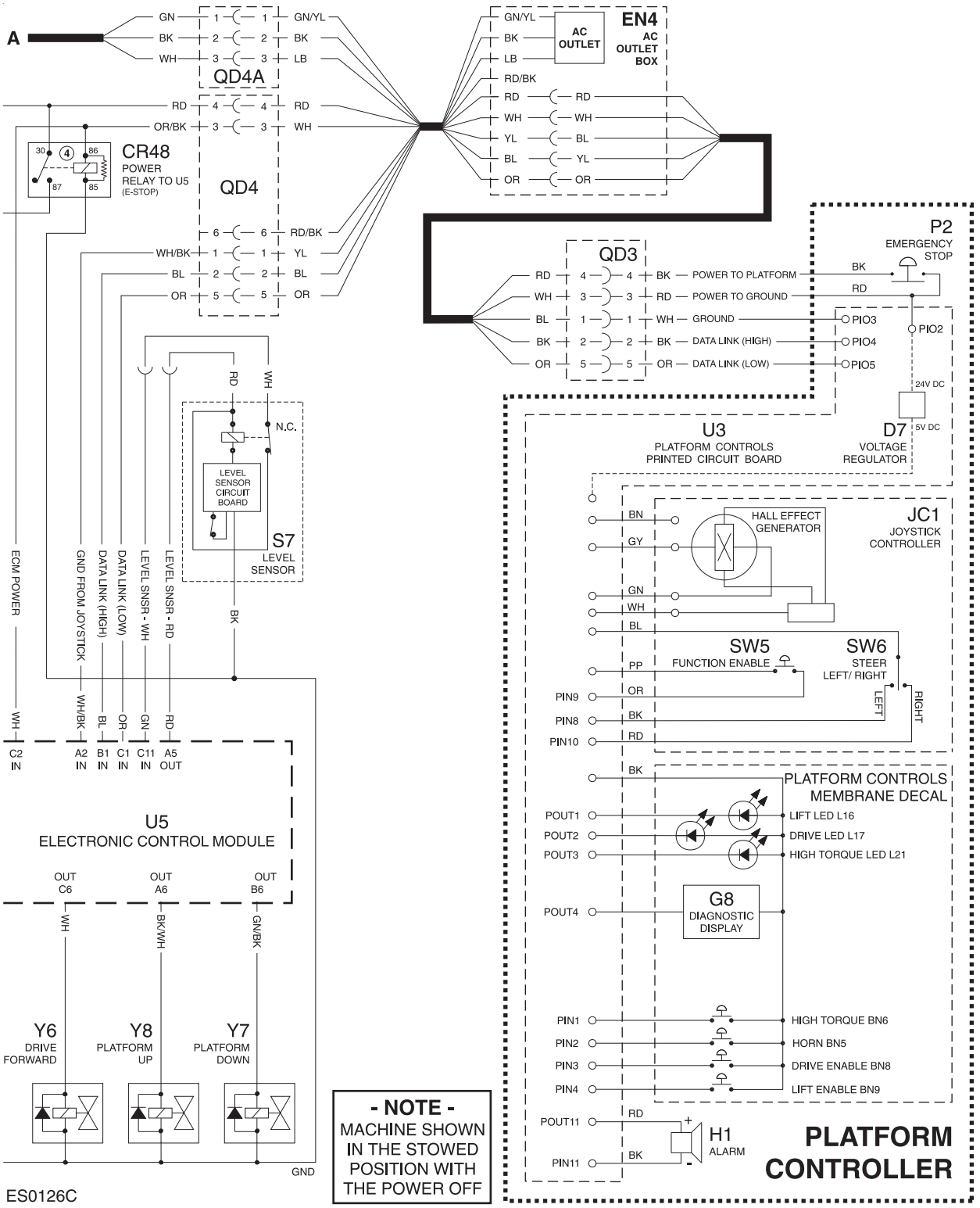


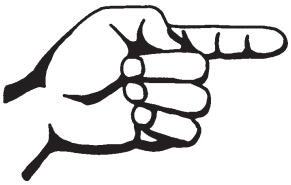
ES0126C

Electrical Schematic

REV A

Part 2 of 2





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Hydraulic Component Reference and Symbols Legend

REV A

Orifice

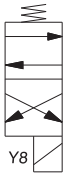
Variable speed motor

Brake

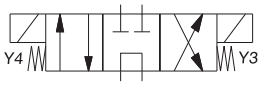
Check valve

Hydraulic cylinder

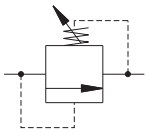
Fixed displacement pump



Solenoid operated 2 position 4 way directional valve

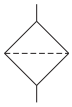


Solenoid operated 3 position 4 way directional valve



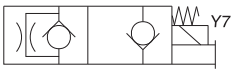
Relief valve

Bi-directional motor

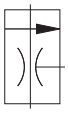


Filter

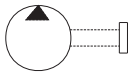
Solenoid operated 3 position 4 way directional valve



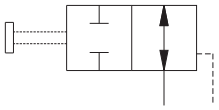
Solenoid operated 2 position 2 way directional valve normally closed with manual override



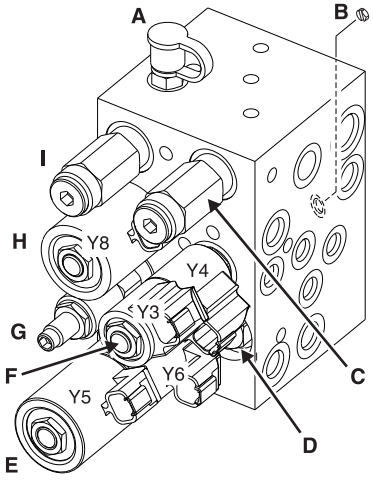
Priority flow regulator



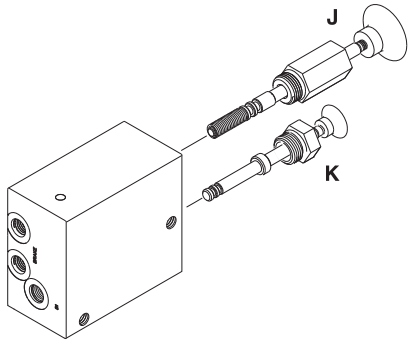
Hand pump



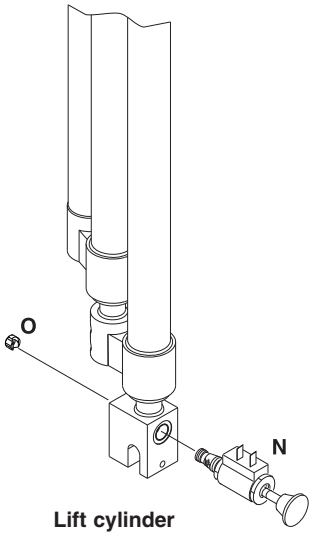
Pilot operated needle valve



Function manifold



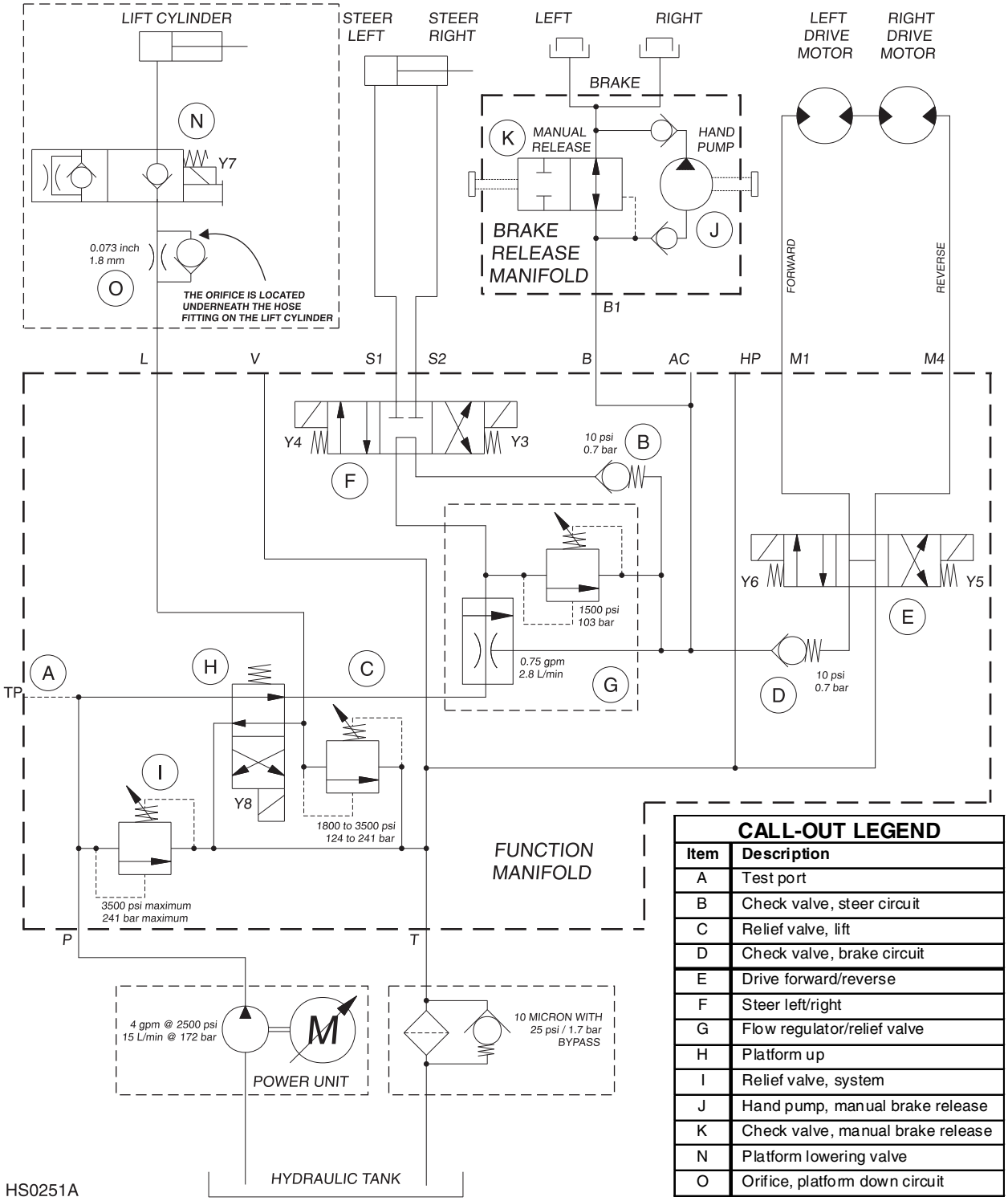
Brake manifold



Lift cylinder

Hydraulic Schematic

REV A



CALL-OUT LEGEND	
Item	**Description**
A	Test port
B	Check valve, steer circuit
C	Relief valve, lift
D	Check valve, brake circuit
E	Drive forward/reverse
F	Steer left/right
G	Flow regulator/relief valve
H	Platform up
I	Relief valve, system
J	Hand pump, manual brake release
K	Check valve, manual brake release
N	Platform lowering valve
O	Orifice, platform down circuit

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